Buildings 933 and 937 Vapor Intrusion Assessment and Field Sampling Report

Presidio of San Francisco, California

October 2006

Prepared for:

The Presidio Trust
San Francisco, California

Prepared by:

Erler & Kalinowski, Inc.
Burlingame, California

EKI A000003.08

12 October 2006

Mr. Bob Boggs
California Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

**Subject: Buildings 933 and 937 Vapor Intrusion Assessment and Field Sampling Report, dated October 2006
Presidio of San Francisco, California**

Dear Mr. Boggs:

Enclosed please find one hard copy and one electronic copy of the *Buildings 933 and 937 Vapor Intrusion Assessment and Field Sampling Report, Presidio of San Francisco, California* dated October 2006 and prepared by Erler & Kalinowski, Inc. (EKI) for the Presidio Trust (Trust). This report presents the methods and results of a vapor intrusion assessment conducted at Building 937 and additional sampling for volatile organic compounds in the subsurface at Buildings 933 and 937. This work was conducted in response to an 8 August 2005 request by the Department of Toxic Substances Control (DTSC) to conduct a vapor intrusion analysis at Building 937.

Please contact me at (415) 561-4259 if you have any questions.

Sincerely yours,
The Presidio Trust

Original Signed By

Craig Cooper
Remediation Program Manager

Enclosure

Cc (with enclosure):
Brian Ullensvang, National Park Service (NPS)
Devender Narala, Regional Water Quality Control Board (RWQCB)
Doug Kern, Restoration Advisory Board (RAB)
Mark Youngkin, RAB (cover letter only)

BUILDINGS 933 AND 937
VAPOR INTRUSION ASSESSMENT AND FIELD SAMPLING REPORT

PRESIDIO OF SAN FRANCISCO,
CALIFORNIA

Prepared for:

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October 2006

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Date

BUILDINGS 933 AND 937
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Presidio of San Francisco, California

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Presidio of San Francisco, California

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1.0 EXECUTIVE SUMMARY

The Trust, with input from the National Park Service, the California Environmental Protection Agency Department of Toxic Substances Control, the California Regional Water Quality Control Board San Francisco Bay Region, and community members of the Restoration Advisory Board, implemented the *Buildings 933 and 937 Vapor Intrusion Assessment and Field Sampling Plan* to address concerns of potential vapor intrusion into indoor air at Building 937 and the adjacent Building 933. The Trust is planning to lease Buildings 933 and 937 for recreational/commercial use.

The Trust performed a series of investigations to evaluate the potential for vapor intrusion. The process included the following:

- subslab vapor investigation at Buildings 937 and 933;
- indoor air sampling at Building 937; and
- soil, soil gas, and grab groundwater sampling at Buildings 937 and 933.

Volatile organic compounds ("VOCs") were detected in the subslab sampling, with tetrachloroethene ("PCE") identified as the primary chemical of concern in the subslab vapor beneath Building 937. VOC concentrations in indoor air samples at Building 937 showed no significant risk to building occupants due to vapor intrusion from subsurface impacts under current building conditions.

However, as a result of the PCE concentrations detected in the subslab beneath Building 937, additional sampling was implemented to investigate potential sources and impacts. Soil, soil gas, and groundwater samples were collected in and around Buildings 933 and 937. Site-specific risk-based target concentrations ("RBTCs") were developed for detected VOCs in the subslab vapor, indoor air, and soil gas. PCE and other VOC concentrations were compared to RBTCs. Figure 1 shows sample locations for these investigations. Figure 2 posts all PCE data collected for each media sampled during the investigation. Data summary tables document analytical results for all samples and all media.

Although PCE was detected in the subslab vapor of Building 937 at concentrations significantly greater than its RBTC, no source or extended impact of PCE was found in soil, soil gas, or groundwater during the investigation. Moreover, the available data indicate PCE in the subslab is not migrating into indoor air at levels of concern under the current building configuration.

The Trust plans to lease Building 937 for commercial and recreational uses. The building will be remodeled to address future tenant needs which could change the potential for future vapor intrusion. Although there is no defined impact of VOCs in the subsurface at Building 937, the subslab PCE concentrations are at levels such that the Trust should (1) monitor the subslab vapor or indoor air concentrations after tenant improvements are implemented, and/or (2) install a vapor mitigation system.

At Building 933, PCE was detected at one location in the northern portion of the building at a concentration that exceeds the conservative RBTC using a subslab-to-indoor air attenuation factor of 0.1, but does not exceed the more plausible RBTC, which uses a subslab-to-indoor air attenuation factor of 0.01. As with Building 937, significant impacts to soil, soil gas, and groundwater were not observed at Building 933. The planned tenant improvements at Building 933 will result in a significant disturbance of the soil under the central and southern portions of the building.

2.0 INTRODUCTION

On behalf of the Presidio Trust ("Trust"), Erler & Kalinowski, Inc. ("EKI"), has prepared this *Vapor Intrusion Assessment and Field Sampling Report* documenting the implementation and results of the *Field Sampling Plan for a Vapor Intrusion Assessment at Building 937, Presidio of San Francisco, California*, dated 13 October 2005, ("FSP"; EKI, 2005) and *Preliminary Results of Subslab and Indoor Air Sampling and Field Sampling Plan Addendum for an Additional Investigation at Building 937, Presidio of San Francisco, California*, dated 19 April 2006 ("FSP Addendum"; EKI, 2006a). The field sampling activities for the FSP were completed in December 2005 and January 2006 and the majority of field activities for the FSP Addendum were completed from June to July 2006. Building 937 is located within the Crissy Field Operable Unit and was addressed in the *Crissy Field Operable Unit 4 Implementation Report*, dated July 2004 (EKI, 2004).

2.1 PURPOSE AND PROCESS OF THE BUILDING 937 INVESTIGATION

The Trust plans to lease Buildings 937 to commercial and recreation-compatible businesses. Mr. Robert Boggs of the California Environmental Protection Agency, Department of Toxic Substances Control ("DTSC") raised concerns about the potential for vapor intrusion into Building 937 due to the previous chemical impacts in the subsurface. The Trust prepared the FSP in response to Mr. Bogg's 8 August 2005 request for the vapor intrusion analysis. The scope and objectives of the Building 937 FSP were developed taking into account the DTSC vapor intrusion guidance (DTSC, 2004), the U.S. Environmental Protection Agency ("U.S. EPA") subsurface vapor intrusion guidance (U.S. EPA, 2002), and consultation with the Trust, the National Park Service ("NPS"), DTSC, Regional Water Quality Control Board, San Francisco Bay Region ("Water Board"), and members of the Presidio Restoration Advisory Board ("RAB"). Collectively, these parties are referred to as the "stakeholders."

The Trust discussed data quality objectives ("DQOs") with stakeholders at a 13 September 2005 meeting, and subslab sample locations were selected and marked at a 22 September 2005 site visit to Building 937 with DTSC, Trust, and NPS representatives.

The FSP was approved by the DTSC in a letter, *Field Sampling Plan for Vapor Intrusion Assessment at Building 937, Presidio of San Francisco, California. October, 2005*, dated 16 November 2005. DTSC's comments in the concurrence letter were addressed in a 29 November 2005 letter from the Trust that stated how the DTSC comments would be incorporated into the sampling event. The scope of work was conducted substantially in accordance with the Presidio-wide Quality Assurance Project Plan ("QAPP") (Tetra Tech, 2001).

2.2 Purpose and Process of the Additional Building 937 Investigation and Building 933 Investigation

During the Building 937 subslab investigation, the Trust encountered tetrachloroethene ("PCE") and other volatile organic compounds ("VOCs") at concentrations greater than their respective site-specific risk-based target concentrations ("RBTCs"). Therefore, the Trust prepared the FSP Addendum to the Building 937 FSP to investigate the potential source of PCE impact detected in subslab vapor samples from Building 937.

The Trust recognized that the source and extent of the VOC impact and any potentially significant human health risks should be identified prior to the leasing of the building. By identifying the source, the potential risk to future recreational and commercial building occupants from exposure to residual subsurface chemicals through the vapor intrusion exposure pathway could be evaluated, and if deemed appropriate, monitoring or remedial measures evaluated and implemented.

The Trust prepared a draft DQOs table and a draft sampling map for an additional investigation of Building 937. Investigation near and around Building 933 was included in the additional scope to evaluate if sources of the VOCs detected at Building 937 could have originated from Building 933. The draft tables and figures were provided with a letter dated 28 February 2006, in which the Trust transmitted the draft PCE concentrations detected in subslab vapor to stakeholders. The DQOs were revised to incorporate stakeholder comments, and the FSP Addendum was issued on 19 April 2006.

The FSP Addendum was approved by the DTSC in a letter, *Preliminary Results of Subslab and Indoor Air Sampling and Field Sampling Plan Addendum for an Additional Investigation at Building 937, April 18, 2006, Presidio of San Francisco, California,* dated 8 May 2006. The FSP Addendum was implemented in June and July of 2006.

2.3 Chronology of Field Sampling Plan Preparation and implementation

The following is the chronology of the FSP and FSP Addendum preparation and implementation:

- 8 August 2005 – Request for subslab vapor sampling by Robert Boggs of DTSC.
- 13 September 2005 – Meeting with stakeholders to discuss draft DQOs provided on 6 September 2005.
- 22 September 2005 – Site visit to Building 937 to select and mark subslab sample locations.
- 13 October 2005 – FSP issued for stakeholder review and comment.
- 16 November 2005 – DTSC Approval Letter issued, with conditions that were incorporated into the FSP.

- 29 November 2005 – Trust issued a response letter to DTSC Letter (Trust, 2005).

- 1 December 2005 – Subslab vapor samples collected at Building 937.

- 31 January 2006 – Indoor and ambient air samples collected at Building 937.

- 28 February 2006 – Data from December and January sampling events presented to DTSC. The Trust also provided draft DQOs and sampling locations for additional investigation of Building 937.

- 18 April 2006 – FSP Addendum submitted to stakeholders.

- 8 May 2006 – DTSC approval of FSP Addendum.

- 14 June 2006 – Soil gas sampling at Building 937.

- 20-21 June 2006 – Soil and grab groundwater sampling at Buildings 933 and 937, and subslab vapor samples collected at Building 933.

- 20 July 2006 – Second round of subslab vapor samples collected at Building 937.

2.4 Report Organization

This report documents site background and history, briefly reviews DQO tables from the FSP and FSP Addendum (the actual tables are included in Appendix A for reference), and discusses field procedures and results of the sampling. The sample results are compared to RBTCs, and the conclusions and next steps are discussed.

Table 1 is a matrix that identifies sample media and analyses. Sample results are presented in Tables 2 through 8. Figure 1 shows sample locations and Figure 2 includes a posting of all PCE data collected for each media during the investigation. Appendix A includes the DQO tables from the FSP and FSP Addendum. Laboratory analytical reports are included in a CD as Appendix B. The assumptions and approach to calculate RBTCs are described in Appendix C. Borehole logs are presented in Appendix D, and survey data are included as Appendix E. The data validation report is included as Appendix F.

3.0 BACKGROUND

Buildings 933 and 937 are located approximately 450 feet from the San Francisco Bay at the northern portion of the Presidio (key map on Figure 1). The interior building areas of Buildings 933 and 937 are approximately 13,800 and 17,600 square feet, respectively. Generally, the buildings overlie fill. The depth to groundwater varies between approximately five and eight feet below ground surface ("bgs"). The buildings are considered for commercial and recreational human land use. Buildings 933 and 937 are within Area B of the Presidio.

The use history and the environmental investigation history of the Building 937 Area are discussed below.

3.1 BUILDINGS 933 AND 937 USE HISTORY

Buildings 933 and 937 were constructed in 1921 and used for aircraft maintenance and later vehicle maintenance (Dames & Moore, 1997). As noted in the Crissy Field Implementation Report (EKI, 2004), the Army used the Building 923/937 Area (which includes Buildings 933 and 937) for aircraft and vehicle maintenance, auto body work, recharging and draining batteries, solvent storage, transformer storage, painting, waste oil storage, fuel storage, and other activities involving the use of hazardous materials. Historically, the Army operated a 500-gallon waste oil underground storage tank ("UST") and a 1,000-gallon xylenes UST (USTs 937.1 and 937.2) at Building 937. Buildings 933 and 937 are considered part of the historic fabric of the Presidio.

3.2 HISTORY OF BUILDING 933 AND 937 INVESTIGATIONS

The following is a summary overview of the remedial actions at Buildings 933 and 937 as components of the Building 923/937 Area, as documented in Dames & Moore's Building 937 UVB Update (Dames & Moore, 1997) and EKI's Crissy Field Implementation Report (EKI, 2004).

In 1981, during the installation of a hydraulic lift and associated UST (UST 937.H) situated in the southeastern portion of Building 937, petroleum hydrocarbons were reportedly observed in soil. Between 1982 and 1984, the Army installed 22 groundwater monitoring wells in the vicinity of Building 937, which identified free product in wells closest to the Building 937 USTs (located on the northern side of the building), with measured thickness ranging between 6 and 36 inches. By 1990, the Army installed 9 additional groundwater monitoring wells in the Building 937 area. In 1992, the Army performed an Interim Remedial Action ("IRA"). This IRA included removal of the tanks and impacted soil as well as the installation of 3 additional groundwater monitoring wells in the Building 937 area. In May 1992, well points were installed upgradient and downgradient of the Building 937 UST area. No free product was observed in the well points. The locations of the three well points (937WP01, 937WP02, and 937WP04)

inside the building are shown on Figure 1. Well point 937WP02 has since been abandoned.

As part of the IRA, the two USTs were removed along with approximately 500 cubic yards of soil. Part of this excavation was inside Building 937 but was limited to avoid structural damage to the building. Post-excavation verification soil samples were collected and petroleum-related constituents detected in the verification soil samples included total extractable hydrocarbons ("TEH"), total volatile hydrocarbons ("TVH"), xylenes, toluene, ethylbenzene, lead, and other volatile compounds such as acetone and chlorobenzene. Benzene was not detected in the verification soil samples (Watkins-Johnson, 1993).

According to Dames & Moore (1997), the Army installed an Unterdruck-Verdampfer Brunnen ("UVB") groundwater remediation unit (a vacuum vaporizer well system) at the northeast side of Building 937 during the summer of 1994 as part of the IRA. The objective of the UVB system was to remove VOCs including petroleum hydrocarbons and chlorinated solvents from the groundwater. The UVB system was placed into operation on 28 September 1994, and operated nearly continuously until approximately December 1995, when electrical problems prevented operation. The Army conducted dye studies to evaluate the effectiveness of the system, and added a downhole pump to improve groundwater recirculation in June 1996. The system was operated intermittently with periodic shutdowns due to electrical problems between July 1996 and 22 April 1997 when it was shut down for evaluation and never restarted. The UVB system ultimately was removed in 1998. Dames and Moore concluded that the UVB system could have removed between 4.84 and 17.61 kilograms of VOCs during the first year of operation, which could have included VOCs from the unsaturated zone as well (Dames & Moore, 1997). The Army stated that the UVB system removed some VOCs, but the system operating parameters, especially flow rates and groundwater circulation patterns, did not meet results anticipated in design, likely because the hydraulic conductivity was less than design assumptions. The Army claimed that the UVB system met the need to begin remedial actions (Dames & Moore, 1997), but the overall effectiveness of VOC removal from the subsurface appears to be limited.

The combination of the removal of the USTs, soil excavation, and operation of the UVB system appears to have remediated the free product previously detected in the groundwater monitoring wells.

In 1998, the Army excavated soil from 2 locations on the north side of Building 937: outside the northwest corner of Building 937, and outside the northeast corner, adjacent to and within the footprint of the 1992 excavation. Chemical concentrations in the sidewall verification soil samples from the northwest corner of the building were less than the applicable cleanup levels. The maximum concentrations remaining in place were 4.5 milligrams per kilogram ("mg/kg") total petroleum hydrocarbons as gasoline ("TPHg"), 380 mg/kg total petroleum hydrocarbons as diesel ("TPHd"), 1,000 mg/kg total petroleum hydrocarbons as fuel oil ("TPHfo"), 0.022 mg/kg acetone, and 0.01 mg/kg trichloroethene ("TCE") (International Technology Corporation, 1999).

For the second excavation in 1998, the Army excavated approximately 2,605 tons of soil from the northeast corner outside of Building 937. Chemicals detected in the verification soil samples in the excavation wall at the 7.5-foot depth adjacent to Building 937 included TPHg, TPHd, TPHfo, benzene, and toluene. Chemical concentrations were less than the applicable cleanup levels in all verification samples, except for three samples collected adjacent to Building 937, which could not be removed due to the potential for structural damage to the building. The maximum concentrations remaining in place were 7,600 mg/kg TPHg, 7,300 mg/kg TPHd, 21,000 mg/kg TPHfo, 1.5 mg/kg benzene, and 21 mg/kg toluene (International Technology Corporation, 1999). Maximum residual concentrations of selected VOCs from these same locations include 3.4 mg/kg acetone, 1.6 mg/kg methylene chloride, 3.7 mg/kg 1,2-dichlorobenzene, 13 mg/kg ethylbenzene, 21 mg/kg toluene, and 73 mg/kg xylenes. Other chlorinated VOCs, such as TCE and its breakdown products were not detected in the confirmation soil samples (International Technology Corporation, 1999).

Also in 1998, the Army excavated soil from the south side of Building 937 (north of Buildings 933 and 935), as well as west of Building 933. Chemical concentrations were less than the applicable cleanup levels in all verification samples. Chlorinated VOCs were not detected in the confirmation soil samples. These excavations were backfilled to original grade (International Technology Corporation, 1999).

In May 2002, the Trust installed 3 soil borings to look for the presence of free-phase hydrocarbons in the smear zone and saturated zone outside the northeast corner of Building 937. TPHg, TPHd, TPHfo, ethylbenzene, and xylenes were detected in soil samples. No free-phase hydrocarbons were observed, and no VOCs were detected (Treadwell & Rollo, 2003).

In July 2004, EKI, on behalf of the Trust, prepared the Crissy Field Implementation Report (EKI, 2004) to document remedial actions at the Crissy Field sites and to request closure for the sites from the regulatory agencies.

The actively monitored groundwater monitoring well nearest to Building 937 is 937GW108, at the northeast corner of Building 937. The Trust has been monitoring groundwater at this well since June 2002. Chlorobenzene, benzene, toluene, ethylbenzene, and xylenes have been detected in groundwater samples from this well at concentrations up to 53 micrograms per liter ("µg/L") for chlorobenzene, 61 µg/L for benzene, but below 6 µg/L for the other compounds. In general, other VOCs have not been detected in groundwater samples from this well (Treadwell & Rollo, 2006).

In August 2005, DTSC expressed concerns about potential vapor intrusion impacts to indoor air from subsurface chemical releases. The Trust initiated the Building 937 investigation to address the issues raised by DTSC.

The Trust has implemented a land use control ("LUC") at Building 937 due to the residual chemicals in the soil, the low-temperature thermal desorption ("LTTD") soil

used as backfill, and the potential for indoor air quality issues. A groundwater use restriction also applies at Building 937. The Trust has also implemented a general LUC at the Building 923/935 Area (which includes Building 933) due to the historical industrial land use in the area and the presence of chemical concentrations in soil above residential cleanup levels (EKI, 2006b and 2006c).

4.0 DATA QUALITY OBJECTIVES

The DQOs prepared for the FSP and FSP Addendum are presented in Appendix A. The DQOs were used to guide the collection of the data needed to evaluate the potential for vapor intrusion to indoor air, and once VOCs were identified in the subslab vapor, the nature and extent of PCE and other VOCs in soil, soil gas, subslab vapor, and groundwater under or near Buildings 933 and 937. The DQOs identify the decisions that were made in the investigation process.

The DQO tables identified the specific guidance levels with which the sample results would be compared to assess whether additional investigation was warranted. Specifically, data were compared to site-specific RBTCs for detected chemicals with specific exposure scenarios (populations, factors, and parameters), the residential and commercial/industrial California Human Health Screening Levels ("CHHSLs"), and cleanup levels from the Crissy Field Remedial Action Plan as a means to identify where chemical concentrations in soil or groundwater may be elevated. The results of these comparisons were intended to determine if additional sampling should be performed and evaluate the need for monitoring or potentially remedial actions.

5.0 FIELD PROCEDURES

Investigative activities at Buildings 933 and 937 discussed in this report consist of the following:

- Collection of 2 rounds of sub-slab soil vapor samples at Building 937 and one round at Building 933;
- Collection of 7 indoor or ambient air samples;
- Drilling and logging of 19 boreholes;
- Collection of 18 soil gas samples;
- Collection of 20 grab groundwater samples; and
- Collection of 17 soil samples.

The field sampling activities listed above were designed to produce information to address the investigation objectives described in the FSP and FSP Addendum, as detailed in the DQO tables (Appendix A). The sample locations are shown on Figure 1. Table 1 is a matrix that summarizes the samples collected and analyses performed on those samples.

The investigative sequence was conducted in general accordance with the FSP and FSP Addendum DQO tables. The FSP and FSP Addendum served as a guide for choosing sample locations and sample types during the field investigation and the performance of follow-up sampling. Sample results are discussed in Section 6.0.

5.1 PRELIMINARY FIELD ACTIVITIES

To prepare Building 937 for field activities conducted as part of the FSP, the Trust removed all equipment stored inside Building 937 and pressure-washed the floor of the building. The centrally located floor drain was found to be blocked and could not be flushed as planned in the FSP. These steps were conducted to eliminate potential sources of contaminants existing in the building. The Trust, NPS, and DTSC selected sampling locations in the field, which were marked by a representative of EKI. Marked sample locations were cleared for potential utility conflicts by the Trust's Utilities Department. As the initial FSP included only subslab and indoor air samples, no drilling was conducted that was deeper than the slab, so only indoor utilities were cleared.

To prepare to implement the FSP Addendum (which included drilling borings in and around Buildings 933 and 937), the Trust again removed equipment stored inside Building 937. The Trust and NPS selected sampling locations in the field, which were marked by a representative of EKI. Marked sample locations were cleared for potential utility conflicts by the Trust's Utilities Department. Underground Service Alert ("USA") was notified of the planned subsurface drilling activities on 11 May 2006, and the USA notification was kept current until all of the drilling was implemented.

Sample locations identified in the field by stakeholders were at times slightly different than the locations proposed in the FSP and FSP Addendum. The sample locations were also modified per the DQOs to accomplish the sampling objectives. The final sample locations were surveyed.

5.2 SAMPLE COLLECTION PROCEDURES

5.2.1 Subslab Soil Vapor Samples

EKI collected subslab soil vapor samples at nine locations in Building 937 on 1 December 2005 and 20 July 2006 in general accordance with the procedures in Attachment A of the FSP. The second round of subslab vapor sampling was to ascertain whether seasonal effects had a significant affect on the subslab vapor results. Two subslab soil vapor samples were collected from Building 933 on 21 June 2006. The subslab sample collection events were set to be during a rising tide, as requested by DTSC. Samples were collected beneath the buildings to assess whether VOCs are present in the subslab of Buildings 933 and 937 at levels that could pose a significant vapor intrusion risk to future building occupants. Subslab soil vapor sampling locations are shown on Figure 1, and are designated with a “VS” in the sample identification label.

Subslab vapor samples were collected in 6-liter SUMMA canisters and analyzed for the full scan of volatile organics with tentatively identified compounds (“TICs”) by US EPA Method TO-15 for quantitative results. Some reporting limits by Method TO-15 were elevated above the concentrations needed to calculate potential human health risks, so the samples were analyzed using Method TO-15 with lower reporting limits to allow performance of the risk calculations. Samples were collected over approximately 40 minutes to an hour, as needed to fill the SUMMA canister.

A second round of subslab vapor sampling was not performed at Building 933; see discussion in Section 6.1.3.3.

5.2.2 Indoor and Ambient Air Samples

In accordance with the DQOs, indoor air samples were collected at Building 937 because concentrations of some VOCs in subslab vapor samples exceeded their respective RBTC (see Section 6.1). The indoor air samples locations were selected based on the subslab vapor sampling data and were presented to the DTSC and the other stakeholders for review and concurrence. As part of the indoor air sampling program, two ambient air samples were also collected to assess background concentrations of the COCs in ambient air.

The indoor and ambient air samples were collected on 31 January 2006, as soon as reasonably possible after review of the subslab vapor sample results. In accordance with DTSC guidance (DTSC, 2005) and Attachment A of the FSP, indoor air and ambient air samples were collected in SUMMA canisters and were analyzed by US EPA Method TO-15 only for the chemicals detected in the subslab vapor. Indoor air samples were collected over an approximate 8-hour period to reflect the commercial exposure scenario.

The chemical concentrations measured over the 8-hour period are representative of the concentrations that would also be present during a 3-hour recreational exposure time. Ambient air samples were also collected over an 8-hour period, but they were staggered to initiate collection approximately one hour before indoor air samples and terminated before the indoor air samples, per DTSC guidance.

Indoor air samples were collected at four locations within Building 937 and ambient air samples were collected at two locations outside the building, as shown on Figure 1 (an additional sample was added based on DTSC request). Sample inlets were approximately four feet above the floor. Ambient air samples were collected outside the building near the former concrete ramp structure at the northwestern corner of the building and near the roll-up doors at the northeastern corner of the building. The ambient air sampling locations were selected to be in the general upwind direction of the building and to avoid physical features such as other buildings and hillsides that could block wind on the sides of the building, as recommended in the DTSC guidance. A very light breeze was present from the southeast on the day of sampling. Therefore sample 937IA105 was located upwind of Building 937, but sample 937IA106 was located downwind of the building.

Indoor air sampling was not conducted after the second round of subslab vapor sampling at Building 937 or after the initial round of subslab vapor sampling at Building 933; see discussion in Section 6.2.3, Deviations from the Sampling Plan.

5.2.3 Soil Gas Samples

On 14 June 2006, EKI collected soil gas samples from 15 locations inside and outside Buildings 933 and 937, as indicated on Figure 1. Using direct push technology, TEG Environmental of Rancho Cordova, California, installed temporary soil gas implants in general accordance with the joint DTSC and the California Regional Water Quality Control Board – Los Angeles Region ("LA Water Board") *Advisory – Active Soil Gas Investigations*, dated 28 January 2003 (DTSC and LA Water Board, 2003) ("State Advisory") and Appendix B of the FSP Addendum. Soil gas samples were collected from approximately 3.5 to 5 feet bgs, at least 1 foot above local groundwater elevation measured in the well points in the building. Sample depths were less than 5 feet bgs when groundwater or high moisture prohibited collection of a sample at 5 feet bgs. The soil gas samples were collected with 50-mL (0.05 L) gas-tight syringes and analyzed by TEG in their onsite mobile laboratory. Temporary tubing to the implants was removed after gas sample results were analyzed and EKI determined that no additional samples were needed to obtain analytical results that meet the project reporting limits. 1,1-Diflouroethane ("DFA") was used as a leak detection compound during soil gas sampling for samples analyzed by both the mobile and fixed laboratories.

5.2.4 Grab Groundwater Samples

Following the soil gas investigation, EKI collected grab groundwater samples from borings (on 20 and 21 June 2006) and well points (on 14 June 2006) as described in the FSP Addendum and where shown on Figure 1. Borings for grab groundwater (and soil samples, if applicable) were located adjacent to the boring for the soil gas, and were identified with the same sample location number. Borings for soil and grab groundwater

samples were drilled with direct push technology by Precision Sampling of Richmond, California. Temporary well screens were inserted into the boring to facilitate the collection of samples of the first encountered groundwater. EKI collected grab groundwater samples in appropriate containers based on the planned sample analysis. Groundwater samples from well points 937WP01 and 937WP04 were collected by low-flow sampling.

5.2.5 Soil Samples

As per the DQOs in the FSP Addendum, when VOC concentrations in soil gas exceeded the residential CHHSLs, a soil sample was collected from that boring (937SB110, 937SB113, 937SB114, 937SB115, and 937SB119; see Tables 1, 4, and 6). When VOC concentrations in soil gas exceeded the commercial/industrial CHHSLs (937SB111 and 937SB112; see Tables 1, 4, and 6), soil samples were collected from that boring as well as from up to 3 adjacent borings. These additional borings (937SB124 through 937SB129) were placed around borings 937SB111 and 937SB112 (see Figure 1).

Soil samples were collected from the borings installed by direct push technology. Soil sampling was conducted in accordance with the FSP Addendum. The primary soil samples were collected during drilling for the grab groundwater sample. The extracted soil cores were screened with an organic vapor meter ("OVM") to identify the potential depth of greatest chemical impact. The soil sample from a core was collected from the depth with the highest screening levels on the OVM; areas of noted discoloration, staining, or odor noted in the core; or from approximately 2 feet bgs if no specific area of impact could be readily identified. Sample depths ranged from 2 to 4 feet bgs.

As noted in the FSP Addendum, at the request of a potential future Trust tenant, one soil sample was collected from soil boring 933SB103 at 3 feet bgs, above the water table. This sample was analyzed for VOCs, metals, and TPH gas and diesel.

5.2.6 Field Quality Control Samples

Field duplicates for subslab vapor, indoor air, soil gas, and groundwater were collected as part of this investigation. A field duplicate is a sample collected at the same time, and from the same source and depth as the associated primary sample. Field duplicate pairs are collected to assess the consistency or precision of the laboratory's analytical system. The QAPP specifies a frequency of ten percent for field duplicates. Duplicate samples are identified on the summary tables in the sample identifier. These field duplicates include two subslab vapor samples, one indoor air sample, three soil gas samples (see discussion below), four grab groundwater samples (one was inadvertently analyzed by the laboratory), and two soil samples.

One of the advantages of soil gas sampling and analysis with a mobile laboratory is the opportunity to perform the purge volume test, a field quality control test identified in the State Advisory (DTSC and LA Water Board, 2003). Field quality control for the soil gas investigation included a probe blank analyzed at the beginning of the day (no VOCs were detected in the probe blank) and the purge volume test. For the purge volume test, three samples from 937SB110 were collected and analyzed, and the PCE concentration ranged

from 0.17 µg/L to 0.23 µg/L, with no other VOCs detected in the sample. These results allowed the field team to select the appropriate purge volume in accordance with the State Advisory and provide duplicate results that indicate the concentrations are reproducible.

In addition, per the FSP Addendum, two soil gas field duplicate samples (937SB112 DUP and 937SB114 DUP) were collected in SUMMA canisters for offsite analysis at K-Prime's fixed laboratory by US EPA Method TO-15. The State Advisory recommends one confirmation sample per day by GC/MS, which was accomplished with the duplicate sample 937SB111 DUP. DTSC guidance recommends 10% fixed laboratory duplicates, which was accomplished with duplicate samples 937SB112 DUP and 937SB114 DUP. The fixed lab duplicate samples are intended to verify the detected analytes and determine if additional COCs are detected (DTSC, 2004), rather than to verify concentrations. The sample volume used for the mobile laboratory (0.05 L) is significantly less than the volume of the SUMMA canister (6 L), which can result in significant concentration differences when analyzed due to the difference in sample size. Neither the larger or smaller sample size is "better"; rather the mobile laboratory sample represents soil gas in the immediate vicinity of the sample location and the SUMMA canister sample represents a larger area of influence.

Trip blanks were submitted to the laboratory for analysis for grab groundwater samples only. A trip blank was planned for the indoor air sample, but due to a leaking canister, a sample was collected in the planned trip blank canister (see Section 6.2.3).

5.2.7 *Sample Naming Conventions*

As described in the FSP and FSP Addendum, sample location identification codes are based on "937" or "933" for Building 937 or Building 933, respectively; "VS" for subslab vapor sample, "IA" for indoor air sample, "SB" for soil boring, and "WP" for well point; and sequential numbering starting at 110 for Building 937 and 101 for Building 933. Multiple media samples were collected from a single soil boring sample location (soil gas, soil, and/or grab groundwater). In keeping with the QAPP, the depth for each soil sample was provided in the sample number; for example, a soil sample from 2 feet below ground surface at boring 937SB111 was designated as 937SB111[2].

5.2.8 Post-Sample Collection Activities

After completion of the soil sampling, a State of California-licensed land surveyor surveyed the sampling locations. PLS Surveys, Inc. of Alameda, California surveyed the sample locations under the direction of EKI (see Section 5.5).

Solid and liquid wastes generated during the investigations at Buildings 933 and 937 were characterized as non-hazardous and were disposed in accordance with applicable regulations by Clearwater Environmental, Inc. on 10 October 2006.

5.3 ANALYTICAL LABORATORIES

The wide range of media investigated required a variety of laboratories to implement the FSP and FSP Addendum. Samples were transported to off-site laboratories under chain of custody procedures. Soil and groundwater samples were transported in chilled ice chests. Copies of the laboratory reports (as *.PDF files) are included as Appendix B.

Subslab vapor samples and indoor and ambient air samples (and duplicates) were analyzed by K-Prime, Inc. ("K-Prime") of Santa Rosa, California, a State-certified analytical laboratory. The subslab vapor and indoor and ambient air samples were analyzed by EPA Method TO-15 with SIM. Per the FSP, the indoor and ambient air samples were only analyzed for constituents detected in the subslab vapor samples.

The soil gas samples were analyzed by TEG, Inc. using EPA Method 8260B in a mobile laboratory at the site on the day of sampling. Duplicate soil gas samples were collected in SUMMA canisters for analysis by K-Prime by EPA Method 8260B.

Groundwater samples and duplicates were analyzed by STL San Francisco, of Pleasanton, California, a State-certified analytical laboratory. The groundwater samples were analyzed for VOCs by EPA Method 8260.

Soil samples and duplicates were analyzed by STL San Francisco. Samples were analyzed for VOCs by EPA Method 8260B. Soil samples from 933SB103 were also analyzed for Title 22 Metals by EPA Method 6020 and total petroleum hydrocarbons as gas and diesel by EPA Method 8015M. STL San Francisco sent the metals analysis to their sister laboratory, STL Seattle.

The analysis of physical properties for determining parameters for vapor intrusion modeling was performed by PTS Laboratories of Santa Fe Springs, California. Analyses included soil bulk density, grain density, total porosity, air filled porosity, water filled porosity, percent moisture content, volumetric moisture content, volumetric air, and total pore fluid saturations by API RP40; and total organic carbon and fraction organic carbon by Walkley-Black method. Additionally, Alpha Analytical of Ukiah, California analyzed the samples for total organic carbon by EPA Method 9060. The soil samples for physical properties were collected from below the sand underlying the building slab and the unsaturated zone soil underlying the sand. The samples were collected in 2-inch diameter sleeves. The physical parameter data were used to provide site-specific parameters for the Johnson & Ettinger model for the vapor intrusion RBTC calculations (see Appendix C).

5.4 DATA VALIDATION

Data validation was performed by DataVal of Novato, California. DataVal reviewed Level III or Level IV data packages provided by K-Prime and STL. Although some ketones and 1,2,4-trichlorobenzene from separate sampling events were rejected, and other data were qualified, no significant data quality issues were identified by DataVal. DataVal stated the data were usable.

TEG's mobile laboratory could not provide data in Level III or Level IV data packages per the Presidio QAPP. Therefore, as stated in the FSP Addendum, the duplicate soil gas

samples were analyzed by K-Prime, and those samples from the fixed laboratory were validated.

5.5 SURVEYING OF SAMPLING LOCATIONS

The final locations of subslab vapor samples, and soil borings (which may include soil gas, soil, and/or grab groundwater sample locations) were surveyed by PLS Surveys, Inc. of Alameda, California, a State of California-licensed land surveyor. The survey included the ground surface elevation and the horizontal coordinates of each sampling location.

Indoor and ambient air samples were not surveyed as the sample points did not leave specific marks on the ground. The locations for these samples were measured from building walls to allow the plotting of the locations on the figures.

Additionally, the concrete seam from the historical excavation inside Building 937 as well as the location of two existing well points (937WP01 and 937WP04) were surveyed to accurately position theses features on site figures. The survey data are included in Appendix E.

6.0 RESULTS OF FIELD SAMPLING

Observations and analytical results of sampling activities at Building 933 and 937 are discussed below. The results of historical investigations are discussed in conjunction with recent findings, as appropriate.

Table 1 presents a matrix of the samples collected and analyzed. Tables 2 through 8 present the results of the sampling events by sample media. The main COC identified at Building 937 and 933 is PCE. Figure 2 posts the site PCE data detected in the various media type.

This section discusses each media in turn, including data gaps addressed, observations and results, and deviations from the sampling plan. A discussion of the results is presented in the data observation and results section.

6.1 SUBSLAB VAPOR

In accordance with the FSP and the FSP Addendum, subslab vapor samples were collected from nine locations (937VS101 to 937VS109) within Building 937 and two locations (933VS101 to 933VS102) within Building 933. The locations of subslab vapor samples are as shown on Figure 2. Sampling was conducted on 1 December 2005 and 20 July 2006 in Building 937 and on 21 June 2006 in Building 933. The subslab vapor data are posted in Table 2.

6.1.1 Data Gaps Addressed

Ethylbenzene and total petroleum hydrocarbons (“TPH”) had been detected in soil and TPH had been detected in groundwater at or above applicable Crissy Field RAP cleanup levels at the northeastern corner of Building 937. Benzene, toluene, ethylbenzene, and xylenes (“BTEX”) had been detected in soil samples from Building 937 at levels that are slightly greater than Water Board Environmental Screening Levels (“ESLs”) for vapor intrusion to indoor air for commercial receptors. As such, there was a potential for indoor air exposure to petroleum hydrocarbons and related VOCs. Therefore, subslab vapor samples were collected in order to evaluate whether residual subsurface chemicals pose a significant risk to future recreational or commercial building occupants through the indoor air exposure pathway.

The FSP identified specific scenarios and exposure assumptions that would be used to calculate RBTCs to which the subslab data would be compared. Based on the DTSC guidance for vapor intrusion, the subslab data were intended to determine if there was a potential risk of vapor intrusion to indoor air, and if indoor air sampling was warranted. RBTCs were calculated for those compounds detected in subslab vapor (i.e., the COCs). The subslab vapor results were compared to the RBTCs.

According to the DTSC vapor intrusion guidance (DTSC, 2004), an attenuation factor alpha (“α”) of 0.01 (Dawson, 2004) was recommended in the FSP to model the

attenuation of COCs in subslab vapor into indoor air. However, DTSC's 16 November 2005 comment letter requested the Trust to use an α=0.1, which is considered more conservative. The Trust agreed to calculate RBTCs using α=0.1 and α=0.01 for screening purposes. Therefore, RBTCs for both of these α values are posted for the detected COCs in Table 2.

6.1.2 Observations and Results

Subslab vapor samples were collected during the sampling events as discussed below. Figure 3 shows only the subslab vapor sample locations and the relative PCE concentrations detected at these locations.

6.1.2.1 <u>Building 937 - First Subslab Vapor Sampling Event</u>

On 1 December 2005, the first round of subslab vapor sampling was performed at nine locations within Building 937. The results are posted in Table 2. VOCs detected in the subslab vapor samples included benzene; chloroform; PCE; toluene; 1,1,1-trichloroethane ("1,1,1-TCA"); TCE; 1,2,4-trimethylbenzene ("1,2,4-TMB"); and xylenes. The maximum concentrations of benzene, chloroform, PCE, and TCE exceeded their respective RBTCs for these chemicals with an α of 0.1. Only PCE and TCE were detected in subslab samples at concentrations that exceed the calculated RBTCs with an α of 0.01. PCE was detected at a maximum concentration of 5,970 micrograms per cubic meter ("$\mu g/m^3$"), significantly greater than the RBTCs of 10 $\mu g/m^3$ (assuming α=0.1) and 100 $\mu g/m^3$ (assuming α=0.01). The sample locations and the PCE concentrations detected in the subslab vapor are shown on Figure 2. The elevated concentrations of PCE in the subslab vapor were not anticipated, as PCE had not been identified as a COC at this site before. However, PCE and breakdown products from PCE degradation have been detected in groundwater downgradient of Building 937.

In addition, acetone, decane, 4-methyl-decane, and undecane were identified as tentatively identified compounds ("TICs") in sample 937VS101. Acetone was also identified as a TIC in samples 937VS108 and 937VS109. The TICs are not included on the regular TO-15 list, and their estimated concentration is reported qualitatively. These compounds were not included as COCs and RBTCs were not calculated for these compounds.

Because concentrations of VOCs were detected above RBTCs during the first round of sampling at Building 937, indoor air sampling and a second round of subslab vapor sampling was prescribed according to the FSP DQO table. The Trust initiated indoor air sampling in accordance with the FSP (see Section 6.2). Because the subslab vapor sample concentrations of PCE were significantly elevated above the RBTCs, the Trust speculated that an unknown source of PCE may have been present in the subsurface below Building 937. Therefore, the Trust proposed in the FSP Addendum to postpone the second round of subslab vapor sampling until additional data from indoor air, subslab vapor, soil gas, grab groundwater, and soil samples could be evaluated as a whole.

In the process of preparing for the additional soil, soil gas, and groundwater sampling, the Trust expanded the scope of the investigation to include the collection of subslab vapor sampling at Building 933. The Trust wanted to assess whether a source was present under Building 933 that could be migrating to Building 937.

6.1.2.2 Building 933 Subslab Sampling Event

On 21 June 2006, subslab vapor sampling was conducted at two locations within Building 933. VOCs detected in subslab vapor samples collected at Building 933 included chloromethane; 1,1-dichloroethane ("1,1-DCA"); methylene chloride; PCE; toluene; and xylenes. The maximum concentration of PCE (40.6 µg/m^3 in sample 933VS101) exceeded the respective RBTC for this chemical with α=0.1, but not for α=0.01. In a duplicate sample (933VS101DUP) collected in series from the same sampling location, PCE was below the respective RBTC (PCE = 6.78 µg/m^3). All other VOCs were below RBTCs. Other VOCs detected in subslab vapor samples collected at Building 937 were not detected in samples collected at Building 933.

6.1.2.3 Building 937- Second Sampling Event

On 20 July 2006, a second round of subslab vapor sampling was performed at Building 937 in order to evaluate the presence of seasonal variations in subslab vapor concentrations and to verify the concentrations of the constituents measured in December 2005.

The second round of subslab vapor sampling was performed at the same nine locations within Building 937 sampled in December 2005. COCs previously detected with a maximum concentration exceeding RBTCs were found to exceed the same RBTC attenuation factors in samples collected during the second round of sampling. The maximum concentrations of COCs detected within subslab vapor samples were similar to results from the first round of subslab vapor sampling, with the exception of PCE concentrations in sample location 937VS104, where the detected PCE concentration was found to have increased from 450 µg/m^3 in December 2005 to 39,900 µg/m^3 in July 2006.

Concentrations of 1,2,4-TMB (which had been detected in the prior round of sampling below the RBTC) exceeded the RBTC of α=0.1 at 937VS107 and its duplicate. Additionally, 1,3,5-trimethylbenzene ("1,3,5-TMB"), not detected above reporting limits in any of the previous sampling events, was detected in 937VS107 Dup at a concentration of 66.5 µg/m^3 below its respective RBTC of 124 µg/m^3 (Table 2).

In general these results indicate that there is no significant seasonal variation between the sampling events. Further, with the exception of the sample from 937VS104, the data are generally consistent with the previous sampling event. As noted on Figure 2, sample 937VS104 was collected near the central floor drain.

6.1.3 Deviations from the Sampling Plan

6.1.3.1 Modification of Sample Locations in Building 937

Some of the subslab vapor sample locations were modified from the points shown in the 13 October 2005 FSP to address DTSC's 16 November 2005 comment letter. Sample location 937VS106 was moved to the northwest corner of the building. Samples 937VS101 and 937VS102 were positioned to be on opposite sides of the concrete seam in the northern corner of the building. Sample location 937VS102 was moved south, so that it was within the historical excavation area. Sample location 937VS109 was moved north away from 937WP04 toward the south side, but outside the former excavated area. Sample locations for the July 2006 sampling event were the same as those for the original December 2005 sampling event.

6.1.3.2 Use of Leak Detection Compound

The FSP and FSP Addendum stated that a leak detection compound would be used to check for leaks in the subslab sampling equipment. A leak detection compound was used for the July 2006 sampling event, but a leak detection compound was inadvertently not used for the December 2005 nor June 2006 subslab vapor sampling events. However, prior to sampling with SUMMA canisters (for subslab vapor, indoor air, or soil gas), the field personnel close the valve closest to the sample collection point and open the vacuum on the canister to verify that the piping from the canister inlet to the closed valve does not leak. No leaks were observed in any of the canisters or piping using this leak check test.

For the July 2006 sampling event, 1,1,1,2-tetrafluoroethane ("TFA") was used as a leak detection compound, and was detected in seven of ten samples at concentrations ranging from 12,000 to 660,000 $\mu g/m^3$. A concentration of 660,000 $\mu g/m^3$ of TFA is equivalent to approximately 150 parts per million by volume ("ppmv"). The leak check compound was sprayed into a large plastic bag that covered the sampling equipment and SUMMA canister. For evaluating the subslab vapor leak check data, the level of concern for the leak check gas in the vapor sample is typically considered, in EKI's opinion, to be 100 to 300 ppmv, which is 0.01 to 0.03 percent by volume. Assuming that the average concentration of the leak check gas in the atmosphere inside the bag around the sampling equipment is 1 percent by volume or greater during sample collection, a concentration of 150 ppmv in the vapor sample would represent an ambient air leak of 1.5 percent or less, which is well within the precision limits of the TO-15 analyses and, therefore, would not affect data quality. These assumptions are based on EKI's experience sampling other soil vapor systems where EKI performs regular soil gas monitoring, and evaluates the reproducibility of the data from event to event.

Thus, although there is no record of use of leak detection compound at the first subslab vapor sampling events at both Building 933 and 937, and the leak detection compound was detected in 70% of the samples in July 2006, the ambient air leak does not appear to be significant. The data from Building 937 are repeatable, the percentage of the leak is likely in the range of 1 to 2 percent, and the detected PCE concentration was not masked

by the presence of leak detection compound. Additionally, no leaks were observed in any of the canisters or piping during the manual leak checks prior to sample collection. Thus, the data collected with the SUMMA canisters are considered valid and reproducible with respect to potential sampling equipment leaks.

6.1.3.3 Follow-up Sampling

Because the December 2005 subslab vapor sampling indicated that an unknown source of PCE may be present in the subsurface below Building 937, the Trust proceeded with the indoor air sampling, but postponed the second round of subslab vapor sampling originally proposed to be three to six months from the original date of sampling. The Trust decided to gather additional soil gas, grab groundwater, and soil data before conducting another subslab vapor sampling event in Building 937 (i.e., the Trust prepared and implemented the FSP Addendum). Because additional sampling did not reveal the source of PCE, a second round of subslab vapor was conducted at Building 937. Additionally, subslab vapor sampling was extended to include Building 933, in order to evaluate it as a potential source of PCE detected in Building 937.

6.1.3.4 Second Round of Subslab Sampling and Indoor Air Sampling at Building 933

Since PCE was detected above the RBTC of 10 $\mu g/m^3$ (α=0.1) in subslab vapor sample 933VS101 in Building 933, the DQOs in the FSP Addendum called for indoor air sampling at Building 933. However, the Trust has selected to postpone a second round of subslab sampling and indoor air sampling at this building as the Trust anticipates that renovations by a planned tenant will affect the subsurface conditions and potential for vapor intrusion to indoor air. Therefore, the Trust proposes to implement additional sampling after tenant modifications have been completed.

6.2 INDOOR AND AMBIENT AIR SAMPLING (BUILDING 937 ONLY)

In accordance with the FSP, indoor and outdoor (ambient) air samples were collected within and in the vicinity of Building 937 on 31 January 2006. Indoor and ambient air sampling locations are shown on Figure 2. Results of indoor and ambient air sampling are summarized in Table 3. Figure 4 shows only the indoor and ambient air sample locations and the relative PCE concentrations detected at these locations.

6.2.1 Data Gaps Addressed

Per the FSP, indoor and ambient air samples were collected at sampling locations where VOCs were detected above their RBTCs in subslab vapor samples collected during the first sampling event at Building 937 in December 2005. The indoor air sampling is intended to indicate if VOC concentrations from the subsurface have migrated into indoor air and pose a significant risk to potential building users. Only analytes detected during the first round of subslab vapor sampling were on the target list for analysis (i.e., chloroform, 1,1,1-trichloroethane, benzene, TCE, PCE, toluene, xylenes, and 1,2,4-TMB.).

6.2.2 Observations and Analytical Results

Benzene was present in all samples (both indoor air and ambient air) at concentrations above the benzene RBTC of 0.22 $\mu g/m^3$. PCE was also detected slightly above its RBTC of 1 $\mu g/m^3$ in two indoor air samples, and slightly below its RBTC in one indoor and one outdoor air sample. None of the other VOCs analyzed for were detected in the air samples. The data from the indoor air sampling event are summarized in Table 3, and the sample locations are shown on Figure 2. The highest concentration of benzene was 2.42 $\mu g/m^3$ at sample location 937IA102, near the floor drain. The floor drain was not flushed prior to sampling because it has been capped in-place. The data indicate that benzene is ubiquitous in the ambient and indoor air. The presence of benzene in the air does not appear to be correlated to subsurface impacts of benzene. Except in the immediate vicinity of the floor drain, the benzene in indoor air appears to originate from benzene in the ambient air.

The PCE concentrations detected in the sample and duplicate from location 937IA103, co-located with the highest subslab PCE concentrations, were both above and below the PCE RBTC of 1.0 $\mu g/m^3$. PCE was also detected at a roughly similar concentration in the ambient air sample that was upwind of the building at the time of the sampling. Using the maximum PCE concentration in indoor air of 1.06 $\mu g/m^3$, the potential risk to commercial/industrial workers, recreational users, and recreational teenagers due to PCE in indoor air is 1.1×10^{-6}, 3.8×10^{-8}, and 1.5×10^{-7}, respectively. Based on these data and the current building configuration, PCE in indoor air does not pose a significant risk to building occupants. Overall, significant concentrations of COCs in subslab vapor do not appear to be migrating into the indoor air at levels of concern under the current building configuration and the detections of PCE in indoor air could be originating from PCE in the ambient air.

6.2.3 Deviations from the Sampling Plan

The FSP stated that a trip blank would be analyzed for the air sampling event. However, approximately 1.5 hours into the 8 hour sample collection, the field representative noted that one of the SUMMA canisters no longer held a vacuum, and so the sample was not valid. The SUMMA canister that was intended to be a trip blank was substituted for the failed sample. Thus, a sample was collected at each location, and the trip blank was sacrificed.

Due to the elevated subslab vapor concentrations at the north side of the building, indoor air sample 937IA03 was added near 937VS107, immediately west of the historical excavation at Building 937. This addition was discussed with DTSC prior to indoor air sampling. Sample locations 937IA03, 937IA04, and 937IA05 were renamed 937IA04, 937IA05, and 937IA06, respectively.

6.3 SOIL GAS

In accordance with the FSP Addendum, soil gas sampling was performed within and in the vicinity of Buildings 933 and 937 on 14 June 2006. Soil gas sampling locations are shown on Figure 2. Results of soil gas sampling are presented in Table 4.

6.3.1 Data Gaps Addressed

The soil gas investigation was conducted to locate the potential source area(s) of PCE and other VOCs previously identified in subslab vapor samples above their respective RBTCs within Building 937 (Section 6.1.2.1). Soil gas sampling was selected for this phase of the investigation because the sampling results could be assessed in real time by an on-site mobile lab. Therefore, field personnel could be responsive to VOCs concentrations detected and potentially focus the planned or additional sampling to better define the potential VOC source area during the field investigation.

Previous sampling data were most sparse in the western portion of Building 937, where no historic sources of contamination had previously been identified. Therefore, in the FSP Addendum, soil gas sampling locations were laid out in a grid pattern across the western portion of Building 937, with three samples planned along three rows oriented generally east to west. The grid pattern was selected in an effort to provide full coverage of unknown areas of the building and to increase the chance of finding the location of the unidentified PCE source, potentially near the elevated subslab vapor concentrations at locations 937VS104, 937VS105, 937VS106, and 937VS107. No soil gas sampling had previously been conducted within Buildings 933 or 937.

Additionally, one soil gas sample was collected within Building 933 to assess the presence of VOCs below Building 933, particularly as a potential source of VOCs detected at Building 937. The soil gas sampling at Building 933 was conducted prior to the subslab vapor sampling at Building 933.

6.3.2 Observations and Analytical Results

Results of the soil gas samples collected on 14 June 2006 are discussed below by building. Figure 5 shows only the soil gas sample locations and the relative PCE concentrations detected at these locations.

6.3.2.1 <u>Building 937</u>

VOCs detected in soil gas samples at Building 937 included PCE, 1,1,1-TCA and TCE. The results are posted in Table 4. VOC concentrations in all of the soil gas samples except sample 937SB112DUP were below the applicable RBTCs. The maximum concentration of PCE detected was 2,850 $\mu g/m^3$ in sample 937SB112DUP, which was collected in a SUMMA canister and analyzed by a fixed laboratory using EPA method TO-15. This concentration exceeds the calculated RBTC for PCE at 3.5 feet bgs of 1,400 $\mu g/m^3$. The primary result sample 937SB112 was 1,100 $\mu g/m^3$, measured in the mobile laboratory by EPA Method 8260B. Duplicate sample 937SB114DUP was also analyzed at a fixed laboratory by EPA Method TO-15. The results from the mobile and fixed laboratories for the duplicate samples from location 937SB114 are essentially the same with reported concentrations of 530 and 494 $\mu g/m^3$, respectively.

According to the DTSC Guidance (DTSC, 2005), comparison of sample results from mobile and fixed labs is primarily to verify the mobile lab detection limits and to identify other potential COCs at the site. The sample collected in the 6-liter SUMMA canister for analysis at the fixed laboratory is not necessarily the same sample as the 50-mL sample

collected for the analysis by the mobile laboratory. Taken as a whole, the fixed laboratory confirmed the detections of the mobile laboratory. The reproducibility of the mobile laboratory was also very good: soil gas samples 937SB111 and 937SB111DUP contained PCE at 1,400 and 1,300 µg/m^3, respectively.

Although the concentration of 937SB112DUP was approximately twice the RBTC for PCE at the 3.5 feet bgs depth, the RBTC is based on a 10^{-6} risk for commercial/industrial occupants. This greater concentration, if used, has a resultant cancer risk of $2x10^{-6}$, which is at the low end of the 10^{-4} to 10^{-6} risk range for CERCLA cleanups and is below Proposition 65 notification requirements.

Because PCE concentrations in the soil gas at locations 937SB111 and 937SB112 exceeded the commercial/industrial CHHSL of 603 µg/m^3, additional soil sampling was performed in accordance with the FSP Addendum, as discussed below in Section 6.5.

No leak detection compound (DFA) was detected in the soil gas samples analyzed by the mobile laboratory. The fixed laboratory did not report detections of DFA in the duplicate soil gas samples collected in SUMMA canisters.

6.3.2.2 Building 933

No VOCs were detected in soil gas sample 933SB103. Thus, there is no indication of a VOC impact in soil gas in the vicinity of sample location 933SB103. The results are posted in Table 4.

6.3.3 Deviations from the Sampling Plan

The field sampling event proceeded quickly and the team had the opportunity to collect two additional soil gas samples, 937SB122 and 937SB123, that were not planned in the FSP Addendum. These samples were collected in the western portion of Building 937; 937SB122 was located within the northern portion of the former excavation area and 937SB123 was located near 937WP04 in the central western portion of the building. Soil gas sampling location 937SB119 was moved approximately forty feet south of the location proposed in the FSP Addendum, while soil gas sampling location 937SB120 was moved to the southeast portion of Building 937 near the former hydraulic lift and location 937VS108 to provide soil gas data in that area. Note that the FSP Addendum indicated that sample locations 937SB119 through 937SB121 may be relocated based on field conditions.

6.4 GROUNDWATER

In accordance with the FSP Addendum, grab groundwater sampling was performed within and in the vicinity of Buildings 933 and 937 on 20 and 21 June 2006 using direct push boring technology. Additionally, groundwater samples were collected from two monitoring wells (937WP01 and 937WP04) on 14 June 2006. Groundwater sampling locations and the well points are shown on Figure 2. Results of the groundwater sampling are posted in Table 5.

6.4.1 Data Gaps Addressed

As indicated in the FSP Addendum, groundwater sampling was performed to evaluate whether groundwater was impacted by PCE or other VOCs. If the PCE detected in the subslab vapor samples was due to groundwater impacts, the evaluation of the fate and mobility of PCE, the significance of the impact, and the potential remedial alternatives would be different from a soil impact. Chlorinated solvents other than chlorobenzene have not been detected in groundwater at well 937GW108, the nearest groundwater monitoring well that is monitored by the Trust. However, PCE and its breakdown products have been historically detected in groundwater downgradient of Building 937.

6.4.2 Observations and Analytical Results

Results of the groundwater samples collected on 20 and 21 June 2006 are discussed below by building. Figure 6 shows only the groundwater sample locations and the relative PCE concentrations detected at these locations.

6.4.2.1 Building 937

Grab groundwater samples were collected from the soil borings as planned in the FSP Addendum. Chemicals detected in groundwater include bromodichloromethane, chlorobenzene, chloroform, PCE, and TCE. As shown in Table 5, all of the chemical concentrations are below the Crissy Field Remedial Action Plan ("RAP") cleanup levels and the RBTCs based on vapor intrusion from groundwater to indoor air. PCE was detected at maximum concentrations of 6.3 and 5.9 µg/L in the primary and duplicate samples, respectively, from 937SB112, which are slightly greater than the Presidio cleanup level for drinking water of 5 µg/L (which is the maximum contaminant level ("MCL")).

Concentrations of all other VOCs for all other groundwater samples were either not detected or were below Presidio cleanup levels for drinking water.

6.4.2.2 Building 933

Grab groundwater samples were collected from 3 soil borings at Building 933. The only chemicals detected in the grab groundwater samples were bromodichloromethane and TCE, both in the sample from location 933SB101. Concentrations of all VOCs for all grab groundwater samples at Building 933 were either not detected or were below Crissy Field RAP cleanup levels, the groundwater RBTCs, and the Presidio cleanup levels for drinking water.

6.4.3 Deviations from the Sampling Plan

In addition to the sampling planned in the FSP Addendum, grab groundwater samples were collected from locations 937SB115, 937SB129, and 937SB130, which were not anticipated in the FSP Addendum. Also, duplicate samples from both well points 937WP01 and 937WP04 were collected, and only one duplicate was requested for analysis. However, the laboratory inadvertently analyzed both duplicates. The well points had very low yield and excessive drawdown during low-flow purging and

sampling (on the order of 2-3.5 feet), therefore duplicates were collected from each well point.

6.5 Soil Sampling

In accordance with the FSP Addendum, soil sampling was performed within the vadose zone in the vicinity Building 933 and 937 on 20 to 21 June 2006. Soil sampling locations are shown on Figure 2. Results of soil sampling for VOCs and petroleum hydrocarbons (Building 933 only) are presented in Table 6, and metals results from the sample from Building 933 are presented in Table 7.

6.5.1 Data Gaps Addressed

With the exception of the soil sample planned for 933SB103, all soil samples were collected based on the soil gas sampling results. Soil sampling was scheduled to be one week after the soil gas investigation to allow coordination and selection of soil sample locations. Per the DQOs table in the FSP Addendum, a soil sample was collected from sampling locations where soil gas results exceeded residential CHHSLs (180 $\mu g/m^3$ for PCE) (locations 937SB110 to 937SB115 and 937SB119). Additionally, up to three additional soil samples from adjacent soil sampling locations were collected where the soil gas results at sampling locations exceeded commercial/industrial CHHSLs (603 $\mu g/m^3$ for PCE) (locations 937SB111 and 937SB112). Soil borings 937SB124 through 937SB128 were drilled as step out samples around locations 937SB111 and 937SB112 to investigate the potential impact of VOCs in soil. No previous soil data were available from the soil gas sampling locations where VOC concentrations in soil gas exceeded CHHSLs. Soil sampling in adjacent areas was used to assess the lateral extent of VOCs in the vicinity of potentially elevated VOC concentrations in soil gas.

6.5.2 Observations and Analytical Results

Results of the soil samples collected on 20 and 21 June 2006 are discussed below by building.

6.5.2.1 Building 937

The only VOCs detected in soil samples from Building 937 are acetone and PCE. The detected acetone concentration of 0.068 mg/kg is below the Presidio cleanup level of 0.24 mg/kg for recreational land use stated in the Presidio-wide Cleanup Level Document (EKI, 2002). No value for PCE is listed in the Cleanup Level Document, so PCE concentrations were compared to the Water Board's Environmental Screening Levels ("ESLs") (Water Board, 2005a and 2005b), as recommended in the Cleanup Level Document. The commercial/industrial ESL for PCE based on vapor intrusion to indoor air is 0.24 mg/kg. PCE was only detected in the soil sample and duplicate from boring 937SB112 at concentrations of 0.02 and 0.043 mg/kg, an order of magnitude below the ESL. No other VOCs were detected in the soil samples.

6.5.2.2 Building 933

Acetone was the only VOC detected in the soil sample from 933SB103 at a concentration of 0.091 mg/kg, well below the Presidio cleanup level of 0.24 mg/kg. No other VOCs were detected in the soil sample.

TPH as diesel was detected in the soil sample from 933SB103 at a concentration of 12 mg/kg, well below the TPH diesel cleanup level of 700 mg/kg. TPH as gasoline was not detected above the laboratory detection limit of 0.46 mg/kg in this soil sample.

The soil sample from location 933SB103 was also analyzed for metals. No metals were detected above the Presidio cleanup levels for beach dune lithology, recreational land use, and the ecological buffer zone.

6.5.3 Deviations from the Sampling Plan

Although VOCs were not detected in the soil gas sample from 933SB103, since a sample was planned for collection at this location for other compounds, it was also analyzed for VOCs. The sample 933SB103 was collected from approximately 2.5 feet bgs, above the groundwater level.

Additionally, two soil sampling locations 937SB129 and 937SB130 were added to further delineate potential soil impacts in the northwestern corner of Building 937, as shown on Figure 2.

Two hand augered soil samples were proposed for collection on the west side of Building 937. These locations were identified in an email to the DTSC on 16 June 2006, and in a follow-up telephone conversation with the Trust on June 19th, DTSC agreed with the hand augered samples. However, when EKI field representatives tried to hand auger in the proposed locations, they encountered a concrete slab that was present at each point attempted along the west side of the building. Thus, sample collection was not possible.

6.6 SITE GEOLOGY AND HYDROGEOLOGY

Buildings 933 and 937 are located on Quaternary alluvial fill, consisting mostly of beach dune sand. Immediately west of the buildings is a serpentinite outcrop, which results in weathered serpentine being encountered in some of the borings, especially in the northwestern corner of Building 937. Outside of the northwestern corner, Building 937 is underlain by approximately 1.5 to 2.5 feet of sand, which is generally underlain by a silt with sand. No base rock is present under the slab at Building 937.

Groundwater was encountered from 4 to 6 feet bgs at the Site. The direction of groundwater flow in the vicinity of Buildings 933 and 937 is reported to be to the northeast based on wells on the eastern side of Buildings 933 and 937 (Treadwell & Rollo, 2006).

Borehole logs are included as Appendix D.

6.7 SOIL PHYSICAL PROPERTIES

Physical properties of three soil samples were analyzed to provide input for the soil vapor modeling conducted in Appendix C to develop RBTCs. At Building 937, the physical properties samples at locations 937SB112 and 937SB113 were collected from the sand and underlying silt, respectively. At Building 933, the physical properties sample was collected from the fill underlying the building. A summary of these properties is provided in Table 8.

To evaluate total organic carbon ("TOC") content, EKI sent soil samples to both Alpha Analytical Laboratory in Ukiah, California and PTS Laboratories in Santa Fe Springs, California. The labs each use a different method to measure TOC. The range of values is shown in Table 8. The Walkley-Black Method, used by PTS, resulted in lower TOC concentrations than EPA Method 7090, a combustion method used by Alpha Analytical. Alpha Analytical Laboratory only ran the TOC analyses; all other analyses in Table 8 were conducted by PTS.

6.8 RESULTS OF DATA VALIDATION

Data validation of Level III and Level IV laboratory data packages was performed by DataVal, Inc., of San Rafael, California, in accordance with the project-specific guidelines outlined in the QAPP. The data were reviewed for holding times, blanks, GC/MS tunes, initial calibrations, continuing calibration verification standards, internal standards, laboratory control samples, matrix spikes, matrix spike duplicates, compound identification and quantitation, and field duplicate samples. If applicable, data were also reviewed for surrogate recoveries, inductively coupled plasma emission spectrometry ("ICP") interference check standards, and ICP serial dilutions. Overall, DataVal concludes that the data are usable, with the exception of rejected data. DataVal's Data Validation Summary Reports are included in Appendix F.

Based on the data validation process, none of the data was rejected from the December 2005 or June 2006 subslab vapor samples; the January 2006 indoor air samples; or the June 2006 soil gas duplicate samples analyzed by KPrime. The 1,2,4-trichlorobenzene results from 3 samples from the 20 July 2006 subslab vapor sampling event were rejected due to serious deficiencies in the ability to meet quality control criteria (i.e., calibration issues with the Daily Relative Response Factors and continuing calibration verification percent difference with the standard; see DataVal's reports, Appendix F). Further, some of the VOCs from these all of these sampling events (except the indoor air samples) were qualified due to internal standard area count failure or continuing calibration verification.

Of the soil and water data analyzed by STL, several ketones (methyl ethyl ketone, methyl isobutyl, and sometimes acetone) results from selected soil samples were rejected due to serious deficiencies in the ability to meet quality control criteria (i.e., calibration issues with the Average and Daily Relative Response Factors, and continuing calibration verification percent difference with the standard; see DataVal's reports, Appendix F). DataVal flagged the detected concentrations of acetone as estimated, although the

detected concentrations were only slightly above the laboratory reporting limits. As shown in Table 6, rejected acetone sample results below the laboratory reporting limits were marked with an "R." The data validation flags are included in the project database. Other VOCs were qualified for various reasons, as documented in the summary report.

Finally, DataVal noted that there was no documentation to indicate that silica-gel cleanup had been performed prior to TPHd analyses per the QAPP. Although TPHd was detected at 12 mg/kg in sample soil 933SB103[2.5] and the detection of additional organic material (non-petroleum) may potentially overestimate the actual TPHd concentration present, the detected concentration is well below the cleanup level and therefore is not considered a reason to qualify this data.

7.0 CALCULATIONS OF RISK-BASED TARGET CONCENTRATIONS

The FSP presented an approach for calculating RBTCs for indoor air and subslab vapor, including the potentially exposed populations and key exposure assumptions. RBTCs for soil gas and groundwater were developed using a similar methodology. For Buildings 933 and 937, the potential risks to future commercial/industrial workers and adult, teenage, and child recreational receptors were considered. The general approach to develop RBTCs was as follows:

(1) Chemical-specific RBTCs were developed for indoor air ("$RBTC_{IA}$") for each chemical detected in the subslab vapor samples. The RBTCs correspond to a target lifetime incremental cancer risk of 10^{-6} and / or a target Hazard Index of 1.

(2) The $RBTC_{IA}$ was divided by an attenuation factor of 0.1 or 0.01 to calculate the equivalent RBTC for subslab soil vapor ("$RBTC_{SS}$"). The conservative attenuation of 0.1 was used at DTSC's request.

(3) RBTCs for soil gas ("$RBTC_{SG}$") and groundwater ("$RBTC_{GW}$") were developed by calculating attenuation factors using the Johnson and Ettinger model as published by U.S. EPA (2004). The $RBTC_{IA}$ was divided by the compound- and media-specific attenuation factor to obtain $RBTC_{SG}$ and $RBTC_{GW}$ for each VOC.

The FSP called for cumulative risks (carcinogenic risks and non-carcinogenic hazard indices) to be calculated for each population for subslab vapor and for indoor air. However, at the time the FSP was written, the Trust did not know that the subslab sampling results at Building 937 would be dominated by PCE at such high concentrations. Therefore, in this document, rather than calculating cumulative risks for each population and each media, risks are calculated and discussed in the following sections, as appropriate.

Appendix C provides a detailed summary of the RBTC calculations, including the pathways and assumptions.

7.1 CALCULATED RBTCS

PCE was the most commonly detected compound at Building 937. As described in Appendix C, RBTCs were calculated for VOCs detected at the site in indoor air, subslab vapor, soil gas, and groundwater. The minimum RBTC for the various exposure scenarios was used as the RBTC for comparison to sample results; for all COCs, the minimum calculated RBTCs were based on the commercial/industrial worker exposure scenario. RBTCs were not calculated for VOCs in soil because the detected concentrations were very low and were significantly less than the Water Board's ESLs based on the vapor intrusion pathway. The RBTCs are posted at the bottom of Table 2 for subslab vapor, Table 3 for indoor air, Table 4 for soil gas, and Table 5 for

groundwater, as well as in Appendix C. On each of these tables, detected concentrations of VOCs that exceed the RBTCs are shown in **boldface** type.

7.2 COMPARISON OF SITE DATA TO RBTCS AND DISCUSSION OF RISKS

The analytical results are compared to RBTCs in this section and human health risks are discussed, as appropriate.

7.2.1 Subslab Vapor

7.2.1.1 Building 937

With the exception of 937VS102, subslab vapor concentrations of PCE in all samples from Building 937 exceeded the RBTC of 10 µg/m^3 (α =0.1), and only 937VS102 and 937VS103 did not exceed the RBTC of 100 µg/m^3 (α =0.01). TCE and benzene were also detected above their respective RBTCs of 31 µg/m^3 (α =0.1) and 2.2 µg/m^3 (α =0.1), respectively. The maximum detected benzene concentration is 4.5 µg/m^3 at location 937VS105, which is the same location with elevated TCE (1,620 µg/m^3).

Therefore, the concentrations of PCE (and occasionally TCE and benzene) in subslab vapor beneath Building 937 do exceed the respective calculated RBTC. Using the maximum concentrations of PCE in subslab vapor (39,900 µg/m^3), the calculated lifetime incremental cancer risk for the commercial/industrial worker is 4×10^{-3} (at α =0.1) or 4×10^{-4} (at α =0.01). These results indicate that further evaluation of potential exposures to PCE in indoor air at Building 937 is warranted.

7.2.1.2 Building 933

The subslab vapor concentrations of PCE in sample 933VS101 was slightly above the RBTC of 10 µg/m^3 (α =0.1) at 40 µg/m^3, but less than the RBTC of 100 µg/m^3 (α =0.01). No other VOCs were detected above their respective RBTC screening levels at Building 933.

The cumulative lifetime incremental cancer risks due to all VOCs in subslab vapor are 4.3×10^{-6} (α =0.1) for the commercial/industrial worker and 1.5×10^{-6} (α =0.1) for the child and adult recreational population. The non-cancer Hazard Indices are 0.064 and 0.045 (α =0.1) for the worker and recreational populations, respectively. Using an attenuation factor of α =0.01, which is more plausible for Building 933, the risks would be an order of magnitude lower. Overall, the risks are within the 10^{-4} to 10^{-6} risk range for CERCLA sites and are less than the Proposition 65 notification level of 10^{-5}. The Hazard Indices are less than one, which is the level of significance for non-carcinogenic effects. Thus, although the concentration of PCE in one subslab vapor sample does exceed the most conservative RBTC, PCE and other VOCs do not appear to pose a significant risk to future commercial/industrial and recreational users at Building 933.

7.2.2 Indoor and Ambient Air

7.2.2.1 Building 937

Only benzene and PCE were detected in indoor and ambient air samples. Benzene concentrations appear to be ubiquitous in ambient air, and at concentrations greater than the RBTC. Although the benzene concentration at indoor air sampling location 937IA102 is approximately two times higher than all of the other indoor air and ambient air sampling locations, the benzene does not appear to be a result of subsurface vapor intrusion as benzene was not detected in the subslab vapor sample collected adjacent to the floor drain (location 937VS104).

PCE was detected slightly above the RBTC of 1 $\mu g/m^3$ in two samples (937IA102 and 937IA103 DUP) at concentrations of 1.01 and 1.06 $\mu g/m^3$, respectively. The corresponding lifetime incremental cancer risk to commercial/industrial workers, recreational users, and recreational teenagers due to PCE in indoor air at these levels is $1.1x10^{-6}$, $3.8x10^{-8}$, and $1.5x10^{-7}$, respectively. Based on these data and the current building configuration, PCE in indoor air does not pose a significant risk to building occupants.

Although the subslab vapor results suggest a potentially significant risk to future building occupants (see Section 7.2.1.1), the indoor air sampling results show that PCE does not appear to be migrating into the indoor air at levels of concern under the current building configuration.

7.2.2.2 Building 933

Indoor and ambient air in and near Building 933 has not been sampled.

7.2.3 Soil Gas

7.2.3.1 Building 937

VOCs detected in soil gas samples from Building 937 included PCE, 1,1,1-TCA and TCE. The concentrations of 1,1,1-TCA and TCE were below their respective RBTCs. The PCE concentrations measured by the mobile laboratory were below the depth-specific RBTC. Although the PCE concentration in the duplicate sample from the fixed laboratory at location 937SB112 was greater than twice the RBTC for PCE at the 3.5 foot bgs depth, the resultant risk for commercial/industrial workers is $2.0x10^{-6}$, which is within the CERCLA risk range of 10^{-4} to 10^{-6} and below the Proposition 65 notification risk level of 10^{-5}. Moreover, as indicated above, the indoor air results do not indicate that significant vapor intrusion of PCE is occurring under the current building configuration.

7.2.3.2 Building 933

No VOCs were detected in soil gas sample 933SB103.

8.0 CONCLUSIONS AND NEXT STEPS

8.1 CONCLUSIONS

8.1.1 Building 937

PCE, TCE, and benzene have been detected in subslab vapor samples collected in Building 937 above their respective RBTCs. PCE was detected in subslab vapor at concentrations that are orders of magnitude greater than its RBTC. However, extensive additional sampling of soil gas, groundwater, and soil has not identified a source of the PCE detected in the subslab vapor or areas of significant impact. Although PCE was detected in indoor air, it was also detected in one of the ambient air samples. Moreover, the risk to commercial/industrial workers using the maximum detected indoor air concentration of PCE, not accounting for the detection in ambient air, is 1.1×10^{-6}. In accordance with the DTSC vapor intrusion guidance, these results suggest that on-going monitoring of subslab vapor and/or indoor air would be appropriate (DTSC, 2004). The guidance does not require mitigation unless the risks due to VOCs in indoor air are greater than 10^{-4}.

8.1.2 Building 933

PCE has been detected in one of the subslab vapor samples collected from the two locations in Building 933 above its conservative RBTC screening level. Additional soil gas, grab groundwater, and soil sampling have not identified the presence of PCE, other VOCs, or other COCs at Building 933. As discussed above, the detected PCE concentrations do not pose a significant risk to future commercial/industrial and recreational users.

8.2 NEXT STEPS

8.2.1 Building 937

The Trust plans to lease Building 937 for commercial or recreational use (Trust 2006b). Based on current plans, the tenant will perform significant remodeling work, which may include slab removal and seismic upgrades. Portions of the building space may be subdivided. Additionally, improvements to the building's ventilation system will be required prior to occupancy.

While no VOC impact other than to subslab vapor has been found, the indoor air concentrations of COCs determine a recipient's actual exposure. However, the subslab PCE concentrations and the PCE concentrations in indoor air are at levels such that the Trust, at a minimum, should monitor the subslab vapor or indoor air concentrations after tenant improvements are implemented. If desired, the Trust could install a vapor

mitigation system. Therefore, the Trust may choose to monitor subslab or indoor air concentrations in the future, especially after building modifications are implemented.

8.2.2 Building 933

The Trust plans to lease Building 933 for commercial or recreational use (Trust, 2006a; DTSC, 2006b). Based on current plans, the tenant will perform significant remodeling work, which may include slab removal and excavation of subgrade material. Additionally, the building's ventilation system will likely be improved prior to occupancy.

No COC impact other than minor detections of PCE above a conservative screening level in subslab vapor has been found in the northern portion of Building 933. The potential for vapor intrusion into indoor air is considered limited. Since the planned tenant improvements at Building 933 will result in a significant disturbance of the soil under the central and southern portions of the building, the Trust may choose to monitor subslab or indoor air concentrations in the future, after building modifications are implemented.

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TABLE 1
SAMPLE LABORATORY ANALYSIS MATRIX
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample ID	Laboratory Analyses					
	VOCs in Subslab Vapor (a)	VOCs in Indoor Air (a)	VOCs in Soil Gas (b)	VOCs in Groundwater (b)	VOCs in Soil (b)	Physical Properties
Building 933						
933VS101	●					
933VS102	●					
933SB101				●		
933SB102				●		
933SB103			●	●	● (c)	●
Building 937						
937VS101	●					
937VS102	●					
937VS103	●					
937VS104	●					
937VS105	●					
937VS106	●					
937VS107	●					
937VS108	●					
937VS109	●					
937IA101		●				
937IA102		●				
937IA103		●				
937IA104		●				
937IA105		●				
937IA106		●				
937SB110			●	●	●	
937SB111			●	●	●	
937SB112			●	●	●	●
937SB113			●	●	●	●
937SB114			●	●	●	
937SB115			●	●	●	
937SB116			●			
937SB117			●	●		
937SB118			●	●		
937SB119			●	●	●	
937SB120			●			
937SB121			●			
937SB122			●			
937SB123			●			
937SB124					●	
937SB125					●	
937SB126					●	
937SB127					●	
937SB128					●	
937SB129				●	●	
937SB130				●	●	

TABLE 1
SAMPLE LABORATORY ANALYSIS MATRIX
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample ID	Laboratory Analyses					
	VOCs in Subslab Vapor (a)	VOCs in Indoor Air (a)	VOCs in Soil Gas (b)	VOCs in Groundwater (b)	VOCs in Soil (b)	Physical Properties
Building 937 (continued)						
937WP01				●		
937WP04				●		

Notes:
(a) Samples analyzed by EPA Method TO-15.
(b) Samples analyzed by EPA 8260B.
(c) Sample 933SB103 was also analyzed for petroleum hydrocarbons and metals.
(d) Duplicate samples not listed. See summary tables for duplicate samples.

Abbreviation:
VOCs = volatile organic compounds

TABLE 2
SUMMARY OF SUB-SLAB VAPOR RESULTS FOR VOCS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample Location	Sample ID	Sample Date	Analytical Results (µg/m³) (a)(b)												
			Benzene	Chloromethane	Chloroform	1,1-Dichloroethane	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes, m & p	o-Xylene
Building 933															
933VS101	933VS101	6/21/2006	<3.19	2.62	<4.88	4.45	<3.47	**40.6**	<3.77	<5.46	<5.37	<4.92	<4.92	<4.34	<4.34
	933VS101DUP	6/21/2006	<3.19	<2.07	<4.88	<4.05	<3.47	<6.78	<3.77	<5.46	<5.37	<4.92	<4.92	<4.34	<4.34
933VS102	933VS102	6/21/2006	<3.19	<2.07	<4.88	<4.05	7.19	6.99	15.1	<5.46	<5.37	<4.92	<4.92	6.73	<4.34
Building 937															
937VS101	937VS101	12/1/2005	**3.87**	<2.07	<4.88	<4.05	<3.47	**17.2**	<3.77	<5.46	8.38	5.7	<4.92	8.73	<4.34
		7/20/2006	<31.9	<103	<97.7	<202	<174	**113**	<188	<273	<107	<246	<246	<217	<217
937VS102	937VS102	12/1/2005	<3.19	<2.07	<4.88	<4.05	<3.47	<6.78	<3.77	<5.46	<5.37	<4.92	<4.92	<4.34	<4.34
		7/20/2006	1.63	<5.16	<4.88	<10.1	<8.68	<5.09	<9.42	<13.6	<5.37	<12.3	<12.3	<10.9	<10.9
937VS103	937VS103	12/1/2005	<3.19	<2.07	<4.88	<4.05	<3.47	**43.8**	3.81	<5.46	<5.37	<4.92	<4.92	7.6	<4.34
		7/20/2006	**2.68**	<4.13	<3.91	<8.10	<6.95	**62.6**	<7.54	<10.9	<4.3	<9.83	<9.83	13	<8.88
937VS104	937VS104	12/1/2005	<6.39	<4.13	<9.77	<8.1	<6.95	**450**	<7.54	125	<10.7	<9.83	<9.83	<8.68	<8.68
		7/20/2006	<31.9	<103	<97.7	<202	<174	**39,900**	<188	<273	<107	<246	<246	<217	<217
937VS105	937VS105	12/1/2005	**4.5**	<10.3	<9.8	<20.2	<17.4	**5,340**	<18.8	52.3	**1,620**	<24.6	<24.6	<21.7	<21.7
		7/20/2006	<31.9	<20.7	<48.8	<40.5	<34.7	**2,890**	<37.7	<54.6	**1,190**	<49.2	<49.2	<43.4	<43.4
937VS106	937VS106	12/1/2005	<6.39	<4.13	<9.77	<8.1	<6.95	**474**	<7.54	60.9	<10.7	<9.83	<9.83	<8.68	<8.68
		7/20/2006	<31.9	<103	<97.7	<202	<174	**628**	<188	<273	<107	<246	<246	<217	<217
937VS107	937VS107	12/1/2005	<63.9	<41.3	<97.7	<81	<69.5	**5,790**	<75.4	<109	<107	<98.3	<98.3	<86.8	<86.8
		7/20/2006	<6.39	<20.7	<19.5	<40.5	<34.7	**5,750**	<37.7	<54.6	**33.2**	96.2	<49.2	<43.4	<43.4
	937VS107 DUP	12/1/2005	<63.9	<41.3	<97.7	<81	<69.5	**5,970**	<75.4	<109	<107	<98.3	<98.3	<86.8	<86.8
		7/20/2006	<6.39	<20.7	<19.5	<40.5	<34.7	**7,470**	<37.7	<54.6	**43.3**	**175**	66.5	102	47.8
937VS108	937VS108	12/1/2005	<3.19	<2.07	<4.88	<4.05	<3.47	**154**	<3.77	19.9	16.3	9.54	<4.92	6.95	<4.34
		7/20/2006	**3.74**	<5.16	<4.88	<10.1	<8.68	**194**	19.1	26	18.8	24.2	<12.3	37.4	14.8
937VS109	937VS109	12/1/2005	<3.19	<2.07	**12.4**	<4.05	<3.47	**154**	<3.77	<5.46	12	<4.92	<4.92	5.56	<4.34
		7/20/2006	**3.64**	<2.07	**19.9**	<4.05	<3.47	**216**	9.68	<5.46	18.5	8.31	<4.92	15.7	5.08
Sub-slab RBTC α = 0.1 (c)(d)			**2.2**	**1,900**	**11.5**	**38**	**63**	**10**	**6,300**	**21,000**	**31**	**120**	**124**	**15,000**	**15,000**
Sub-slab RBTC α = 0.01 (c)(e)			**22**	**19,000**	**115**	**380**	**630**	**100**	**63,000**	**210,000**	**310**	**1,200**	**1,240**	**150,000**	**150,000**

TABLE 2
SUMMARY OF SUB-SLAB VAPOR RESULTS FOR VOCS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Abbreviations:

α - Sub-slab vapor to indoor air attenuation factor
<0.50 - Compound not detected at or above indicated laboratory reporting limit
$\mu g/m^3$ - Micrograms per cubic meter
DTSC - Department of Toxic Substance Control
EPA - Environmental Protection Agency
RBTC - Risk-Based Target Concentration
TIC - Tentatively Identified Compound
VOCs - Volatile Organic Compounds

Notes:

(a) Sub-slab vapor samples were analyzed for VOCs using EPA Method TO-15. Only detected compounds are listed.
(b) The following TICs were detected for subslab vapor samples 937VS101, 937VS108, and 937VS109 collected on 1 December 2005: acetone, 4-methyldecane, n-decane and n-undecane. These TICs are not reported herein.
(c) DTSC vapor intrusion guidance entitled *"Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air"*, dated 7 February 2005, recommends using α = 0.01. However, for this project DTSC has requested the use of α = 0.1 for screening purposes.
(d) Detected concentrations exceeding the site-specific RBTC when α = 0.1 are shown in bold.
(e) Detected concentrations exceeding the site-specific RBTC when α = 0.01 are shown in bold and underlined.

TABLE 3
SUMMARY OF INDOOR AND AMBIENT AIR RESULTS FOR VOCS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Location	Sample Location	Sample ID	Sample Date	Analytical Results (µg/m³) (a)(b)	
				Benzene	Tetrachloroethene
Building 937					
Indoor	937IA101	937IA101	1/31/2006	**1.26**	<0.68
	937IA102	937IA102	1/31/2006	**2.42**	**1.01**
	937IA103	937IA103	1/31/2006	**1.41**	0.69
		937IA103 DUP	1/31/2006	**1.37**	**1.06**
	937IA104	937IA104	1/31/2006	**1.26**	<0.68
Outdoor	937IA105	937IA105	1/31/2006	**1.39**	0.79
	937IA106	937IA106	1/31/2006	**1.32**	<0.68
RBTC for Air				**0.22**	**1**

Abbreviations:
<0.50 - Compound not detected at or above indicated laboratory reporting limit
EPA - Environmental Protection Agency
RBTC - Risk-Based Target Concentration
$\mu g/m^3$ - Micrograms per cubic meter
VOCs - Volatile Organic Compounds

Notes:
(a) Air samples were analyzed for benzene, chloroform, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, 1,2,4-trimethylbenzene, xylene (o,-), xylene (m,p-) using EPA Method TO-15. Only detected VOCs are shown.
(b) Air samples that exceed RBTC are shown in bold.

TABLE 4
SUMMARY OF SOIL GAS RESULTS FOR VOCS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Analytical Results (µg/m³) (a)		
				Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene
Building 933						
933SB103	933SB103	6/14/2006	3.5	<100	<100	<100
Building 937						
937SB110	937SB110	6/14/2006	5	230	<100	<100
937SB111	937SB111	6/14/2006	4	1,400	<100	<100
	937SB111 dup	6/14/2006	4	1,300	<100	<100
937SB112	937SB112	6/14/2006	3.5	1,100	<100	<100
	937SB112DUP (b)	6/14/2006	3.5	**2,850 (c)**	<27.3	<26.9
937SB113	937SB113	6/14/2006	4	360	<100	<100
937SB114	937SB114	6/14/2006	3.5	530	<100	<100
	937SB114 DUP (b)	6/14/2006	3.5	494	64.4	5.7
937SB115	937SB115	6/14/2006	3.5	490	<100	230
937SB116	937SB116	6/14/2006	3.5	130	<100	<100
937SB117	937SB117	6/14/2006	3.5	<100	<100	<100
937SB118	937SB118	6/14/2006	3.5	<100	<100	<100
937SB119	937SB119	6/14/2006	4	600	190	<100
937SB120	937SB120	6/14/2006	4	<100	<100	<100
937SB121	937SB121	6/14/2006	4	<100	<100	160
937SB122	937SB122	6/14/2006	4	160	100	<100
937SB123	937SB123	6/14/2006	4	<100	<100	<100
RBTC at 3.5 ft bgs (d)				**1,400**	**2,700,000**	**3,900**
RBTC at 4 ft bgs (d)				**1,700**	**3,200,000**	**4,600**
RBTC at 4.5 ft bgs (d)				**1,900**	**3,700,000**	**5,300**
RBTC at 5 ft bgs (d)				**2,200**	**4,200,000**	**6,100**
CHHSLS (residential) (e)				**180**	**991,000**	**528**
CHHSLS (commercial) (e)				**603**	**2,790,000**	**1,770**

Abbreviations:
<0.50 - Compound not detected at or above indicated laboratory reporting limit
EPA - Environmental Protection Agency
ft bgs - Feet below ground surface
RBTC - Risk-based Target Concentration
µg/m³ - Micrograms per cubic meter
VOCs - Volatile Organic Compounds

Notes:
(a) Soil gas samples were analyzed for VOCs using EPA Method 8260B.
(b) Samples 937SB112DUP and 937SB114DUP were analyzed by EPA Method TO-15 in a fixed laboratory.
(c) Soil gas samples that exceed the RBTC for the given depth are shown in bold.
(d) The RBTC for soil vapor (µg/m³) equals the RBTC for indoor air divided by the compound and site-specific attenuation factor, calculated using the Johnson and Ettinger model. All RBTCs are rounded to two significant figures. The RBTC is a function of depth.
(e) CHHSL = California Human Health Screening Level (California EPA, dated January 2005, Table 1--California Human Health Screening Levels for Soil and Comparison to Other Potential Environmental Concerns).

TABLE 5
SUMMARY OF WATER RESULTS FOR VOCS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

			Analytical Results (µg/L)				
Sample Location	Sample ID	Sample Date	Bromodichloromethane	Chlorobenzene	Chloroform	Tetrachloroethene	Trichloroethene
Building 933							
933SB101	933SB101	6/20/2006	0.7	<0.5	<1	<0.5	0.56
933SB102	933SB102	6/20/2006	<0.5	<0.5	<1	<0.5	<0.5
933SB103	933SB103	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
Building 937							
937SB110	937SB110	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
937SB111	937SB111	6/20/2006	<0.5	0.92	<1	1.6	<0.5
937SB112	937SB112	6/21/2006	<0.5	<0.5	<1	**6.3**	<0.5
	937SB112 DUP	6/21/2006	<0.5	<0.5	<1	**5.9**	<0.5
937SB113	937SB113	6/20/2006	<0.5	<0.5	<1	2.5	<0.5
937SB114	937SB114	6/20/2006	<0.5	<0.5	<1	0.95	<0.5
937SB115	937SB115	6/20/2006	<0.5	<0.5	<1	0.9	0.63
937SB117	937SB117	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
937SB118	937SB118	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
937SB119	937SB119	6/20/2006	<0.5	<0.5	<1	0.92	<0.5
937SB129	937SB129	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
	937SB129 DUP	6/21/2006	<0.5	<0.5	<1	<0.5	<0.5
937SB130	937SB130	6/21/2006	0.61	<0.5	2.4	<0.5	<0.5
937WP01	937WP01	6/14/2006	<0.5	<0.5	<1	<0.5	<0.5
	937WP01 DUP	6/14/2006	<0.5	<0.5	<1	<0.5	<0.5
937WP04	937WP04	6/14/2006	<0.5	<0.5	<1	<0.5	<0.5
	937WP04 DUP	6/14/2006	<0.5	<0.5	<1	<0.5	<0.5
Presidio Drinking Water Cleanup Levels			**80**	**70**	**80**	**5**	**5**
Crissy Field RAP Cleanup Level (a)			**46**	**21,000**	**--**	**8.25**	**81**
Groundwater RBTCs (b)			**6.8**	**150,000**	**66**	**140**	**330**

Abbreviations:

"--" no value listed in California Toxic Rule
<0.50 - Compound not detected at or above indicated laboratory reporting limit
µg/L - Micrograms per liter
RBTCs - Risk-Based Target Concentrations

Notes

(a) Trichloroethene cleanup level was included in the Crissy Field RAP. The cleanup levels for the remaining chemicals were determined from the California Toxics Rule, (Federal Register Vol. 65, No. 97, 18 May 2000), using the same approach used in the Crissy Field RAP.
(b) Groundwater RBTCs were calculated using Johnson and Ettinger model.

TABLE 6
SUMMARY OF SOIL RESULTS FOR VOCS AND PETROLEUM HYDROCARBONS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample Location	Sample ID (c)	Sample Date	Sample Depth (ft bgs) (c)	Analytical Results (µg/kg)				
				VOCs (a)			TPH (b)	
				Acetone (d)	Tetrachloroethene	Other VOCs	TPH Diesel	TPH Gasoline
Building 933								
933SB103	933SB103 [2.5]	6/21/2006	3	0.091	<0.0058	ND	12	<0.46
Building 937								
937SB110	937SB110 [2]	6/21/2006	2.5	<0.068 R	<0.0068	ND	--	--
937SB111	937SB111[2]	6/20/2006	2.5	<0.059 R	<0.0059	ND	--	--
937SB112	937SB112 [2]	6/21/2006	2.5	<0.052 R	0.02	ND	--	--
	937SB112 [2] DUP	6/21/2006	2.5	<0.049 R	0.043	ND	--	--
937SB113	937SB113[2.5]	6/20/2006	3	<0.063 R	<0.0063	ND	--	--
937SB114	937SB114 [1.5]	6/20/2006	2	0.068	<0.0053	ND	--	--
937SB115	937SB115 [2]	6/20/2006	2.5	<0.061 R	<0.0061	ND	--	--
937SB119	937SB119[2]	6/20/2006	2.5	<0.054 R	<0.0054	ND	--	--
937SB124	937SB124[3.5]	6/20/2006	4	<0.058 R	<0.0058	ND	--	--
937SB125	937SB125[2]	6/20/2006	2.5	<0.053 R	<0.0053	ND	--	--
937SB126	937SB126[3]	6/20/2006	3.5	<0.056 R	<0.0056	ND	--	--
937SB127	937SB127[2]	6/20/2006	2.5	<0.065 R	<0.0065	ND	--	--
937SB128	937SB128[3]	6/20/2006	3.5	<0.054 R	<0.0054	ND	--	--
937SB129	937SB129 [2]	6/21/2006	2.5	<0.057 R	<0.0057	ND	--	--
	937SB129 [2] DUP	6/21/2006	2.5	<0.057 R	<0.0057	ND	--	--
937SB130	937SB130 [2]	6/21/2006	2.5	<0.057 R	<0.0057	ND	--	--
Presidio Cleanup Level (e)				**0.24**	**0.24**	**na**	**700**	**610**

Abbreviations:
"--" - not analyzed
ft bgs - Feet below ground surface
µg/kg - Micrograms per kilogram
<0.50 - Compound not detected at or above indicated laboratory reporting limit

na - not applicable
ND - not detected
TPH - Total Petroleum Hydrocarbons
VOCs - Volatile Organic Compounds

TABLE 6
SUMMARY OF SOIL RESULTS FOR VOCS AND PETROLEUM HYDROCARBONS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Notes:

(a) Soil samples were analyzed for VOCs using EPA Method 8260B.
(b) Soil samples were analyzed for TPH using EPA Method 8015.
(c) Sample depths for sample IDs were measured from the bottom of the concrete slab. The total sample depth is as measured from the top of the concrete slab, which is approximately one-half of a foot thick.
(d) Acetone results below laboratory reporting limits are marked with "R" as they were rejected during data validation due to initial and continuing calibration issues. Detected concentrations of acetone were flagged as estimated during data validation.
(e) Presidio Cleanup Levels for recreational land use. TPH values are based on protection of ecological receptors in a terrestrial environment. No value is identified in the Cleanup Level Document for tetrachloroethene. Therefore, the value from the Water Board Environmental Screening Level is used.

TABLE 7
SUMMARY OF SOIL RESULTS FOR METALS
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Analytical Results (mg/kg) (a)																
				Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium, Total	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Building 933																				
933SB103	933SB103 [2.5]	6/21/2006	3	<0.19	1.7	4.6	<0.19	<0.19	30	5	3	9.5	<0.053	<0.19	35	<0.47	<0.19	<0.19	15	13
Presidio Cleanup Levels (b)				5	5.9	500	10	1.7	120	48	120	300	1.6	300	71	1.1	2	1	92	66

Abbreviations:
"–" - Not analyzed
<0.50 - Compound not detected at or above indicated laboratory reporting limit
ft bgs - Feet below ground surface
mg/kg - Milligrams per kilogram

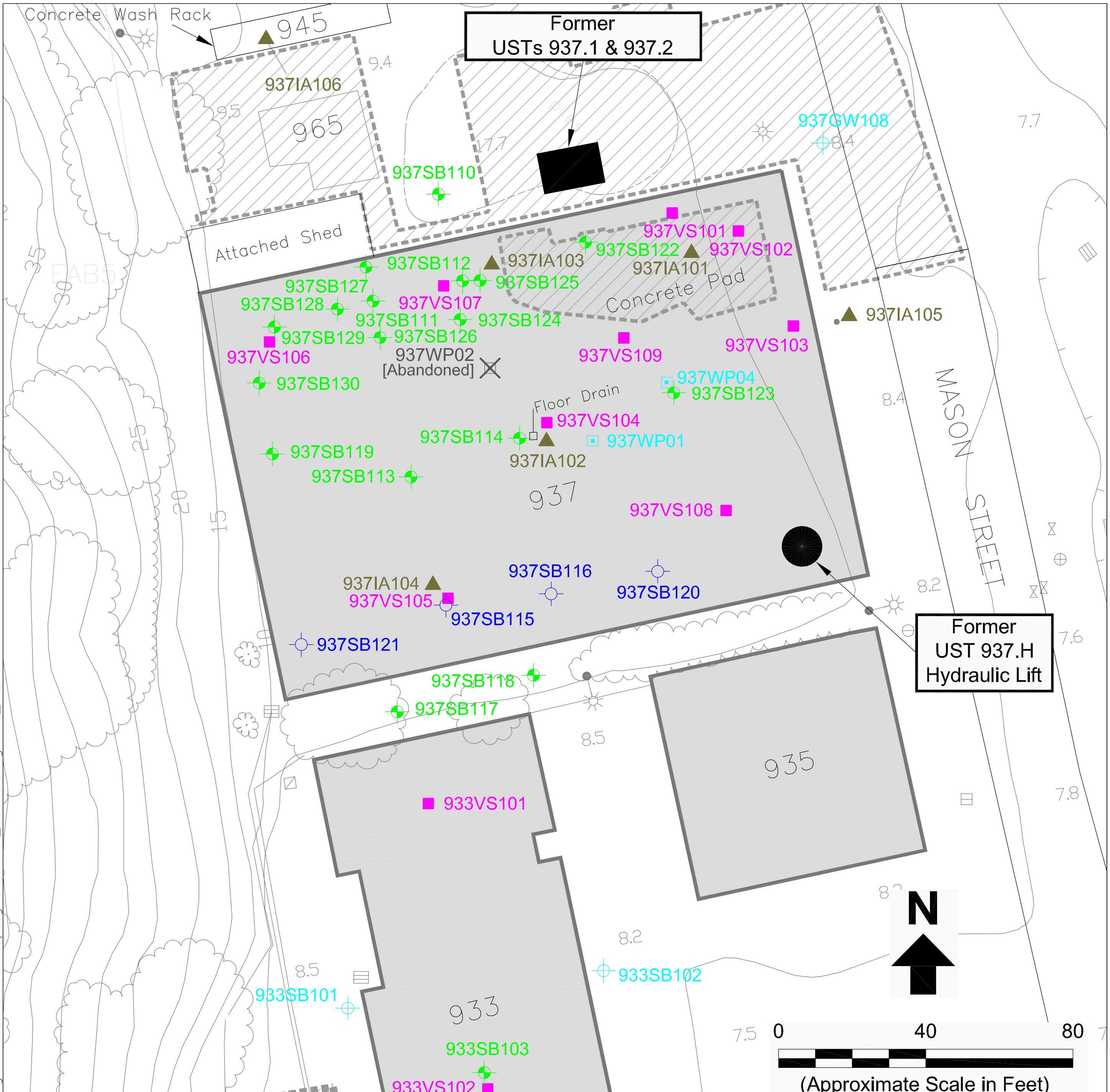
Notes:
(a) Soil samples were analyzed for Title 22 metals using EPA Method 6020.
(b) Presidio Cleanup Levels based on beach dune sand, recreational human land use, buffer zone ecological land use.

TABLE 8
SUMMARY OF PHYSICAL PROPERTIES DATA
Buildings 933 and 937, Presidio of San Francisco
San Francisco, California

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Analytical Results: MOISTURE CONTENT (a) (%, dry weight)	MOISTURE CONTENT (a) (cm^3/cm^3)	VOLUMETRIC AIR CONTENT (a) (cm^3/cm^3)	DENSITY (a) BULK (g/cm^3)	DENSITY (a) GRAIN (g/cm^3)	POROSITY (a), cm^3/cm^3 TOTAL	POROSITY AIR FILLED	POROSITY WATER FILLED	TOTAL PORE FLUID SATURATIONS (a) (% Pv)	TOC (b) (PTS Lab) (mg/kg)	TOC (c) (Alpha Analytical) (mg/kg)
Building 933														
933SB103	933SB103[1.5]	6/21/2006	2	--	--	--	--	--	--	--	--	--	--	5,780
	933SB103[2]	6/20/2006	2.5	20.4	0.311	0.042	1.53	2.65	0.422	0.110	0.312	73.8	2050	--
Building 937														
937SB112	937SB112[1.5]	6/21/2006	2	--	--	--	--	--	--	--	--	--	--	3,710
	937SB112[1]	6/21/2006	1.5	11.6	0.176	0.225	1.51	2.77	0.454	0.279	0.176	38.8	1400	--
937SB113	937SB113[1.5]	6/20/2006	2	--	--	--	--	--	--	--	--	--	--	8,480
	937SB113[2]	6/21/2006	2.5	12.6	0.212	0.144	1.68	2.75	0.388	0.176	0.213	54.6	4050	--

Abbreviations:
% Pv - Percent per volume
<0.50 - Compound not detected at or above indicated laboratory reporting limit
cm^3/cm^3 - cubic centimeter per cubic centimeter
EPA - Environmental Protection Agency
ft bgs - Feet below ground surface
g/cm^3 - grams per cubic centimeter
g/g - grams per gram
mg/kg - Milligrams per kilogram
TOC - Total Organic Carbon

Notes:
(a) Moisture, Volumetric Air Content, Density, Porosity, and Total Pore Fluid Saturations analyzed by method API RP40.
(b) Total Organic Carbon analyzed by Walkley-Black method.
(c) Total Organic Carbon analyzed by EPA method 7090.

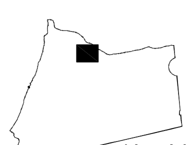


Legend:

- Former UST Location
- Former Army Excavation Areas
- 937 Existing Building
- Air Sample Location
- Well Point
- Grab Groundwater Sample Location
- Subslab Vapor Sample Location
- Soil Gas Sample Location
- Soil Gas, Soil, and/or Grab Groundwater Sample Location

Abbreviations:

UST = underground storage tank



Erler & Kalinowski, Inc.

Buildings 933/937
Sampling Locations

Presidio Trust
San Francisco, CA
October 2006
EKI A000003.08
Figure 1

Notes:
1. All locations are approximate.
2. Basemap provided by the Presidio Trust.
3. Sample survey locations from PLS Surveys, Inc., 11 July 2006.

20061013.0953384 G:\A000003.08\Oct06\Figure 1 - Building 933 and 937 Sampling Locations_colored.dwg SITE_PLAN

AREA 2

Sample Type	Sample ID	Depth	PCE
Indoor Air	937IA103	NA	0.69/**1.06** µg/m^3
Subslab Soil Vapor	937VS107	0.5	**5,790/5,970** µg/m^3 (4)
			5,750/7,470 µg/m^3 (5)
Soil Gas	937SB110	5	230 µg/m^3
	937SB111	4	1,400/1,300 µg/m^3
	937SB112	3.5	1,100/**2,850** µg/m^3 (12)
Soil	937SB110	2.5	<0.0068 mg/kg
	937SB111	2.5	<0.0059 mg/kg
	937SB112	2.5	0.02/0.043 mg/kg
	937SB124	4	<0.0058 mg/kg
	937SB125	2.5	<0.0053 mg/kg
	937SB126	3.5	<0.0056 mg/kg
	937SB127	2.5	<0.0065 mg/kg
	937SB128	3.5	<0.0054 mg/kg
Groundwater	937SB110	5 - 6	<0.5 µg/L
	937SB111	6.4 - 8	1.6 µg/L
	937SB112	4.3 - 6	**6.3/5.9** µg/L

AREA 1

Sample Type	Sample ID	Depth	PCE
Ambient Air	937IA106	NA	<0.68 µg/m^3

AREA 6

Sample Type	Sample ID	Depth	PCE
Indoor Air	937IA101	NA	<0.68 µg/m^3
Subslab Soil Vapor	937VS101	NA	**17.2** µg/m^3 (4)
			113 µg/m^3 (5)
	937VS102	NA	<6.78 µg/m^3 (4)
			<5.1 µg/m^3 (5)
	937VS103	NA	**43.8** µg/m^3 (4)
			62.6 µg/m^3 (5)
	937VS109	NA	**154** µg/m^3 (4)
			216 µg/m^3 (5)
Soil Gas	937SB122	4	160 µg/m^3
Groundwater	937GW108	5 - 15	<0.5 µg/L (13)

AREA 7

Sample Type	Sample ID	Depth	PCE
Ambient Air	937IA105	NA	0.79 µg/m^3

AREA 8

Sample Type	Sample ID	Depth	PCE
Indoor Air	937IA102	NA	**1.01** µg/m^3
Subslab Soil Vapor	937VS104	NA	**450** µg/m^3 (4)
			39,900 µg/m^3 (5)
Soil Gas	937SB114	3.5	530/494 µg/m^3 (12)
Soil	937SB114	2	<0.0053 mg/kg
Groundwater	937WP01	4.2 - 13	<0.5/<0.5 µg/L
	937SB114	3.5 - 8	0.95 µg/L

AREA 9

Sample Type	Sample ID	Depth	PCE
Soil Gas	937SB123	4	<100 µg/m^3
Groundwater	937WP04	4.21 - 13.1	<0.5/<0.5 µg/L

AREA 10

Sample Type	Sample ID	Depth	PCE
Subslab Soil Vapor	937VS108	NA	**154** µg/m^3 (4)
			194 µg/m^3 (5)
Soil Gas	937SB120	4	<100 µg/m^3

AREA 3

Sample Type	Sample ID	Depth	PCE
Subslab Soil Vapor	937VS106	NA	**474** µg/m^3 (4)
			628 µg/m^3 (5)
Soil	937SB129	2.5	<0.0057/<0.0057 mg/kg
	937SB130	2.5	<0.0057 mg/kg
Groundwater	937SB129	4.8 - 9	<0.5/<0.5 µg/L
	937SB130	4.8 - 9	<0.5 µg/L

AREA 4

Sample Type	Sample ID	Depth	PCE
Soil Gas	937SB113	4	360 µg/m^3
	937SB119	4	600 µg/m^3
Soil	937SB113	3	<0.0063 mg/kg
	937SB119	2.5	<0.0054 mg/kg
Groundwater	937SB113	3.8 - 8	2.5 µg/L
	937SB119	5.3 - 8	0.92 µg/L

AREA 5

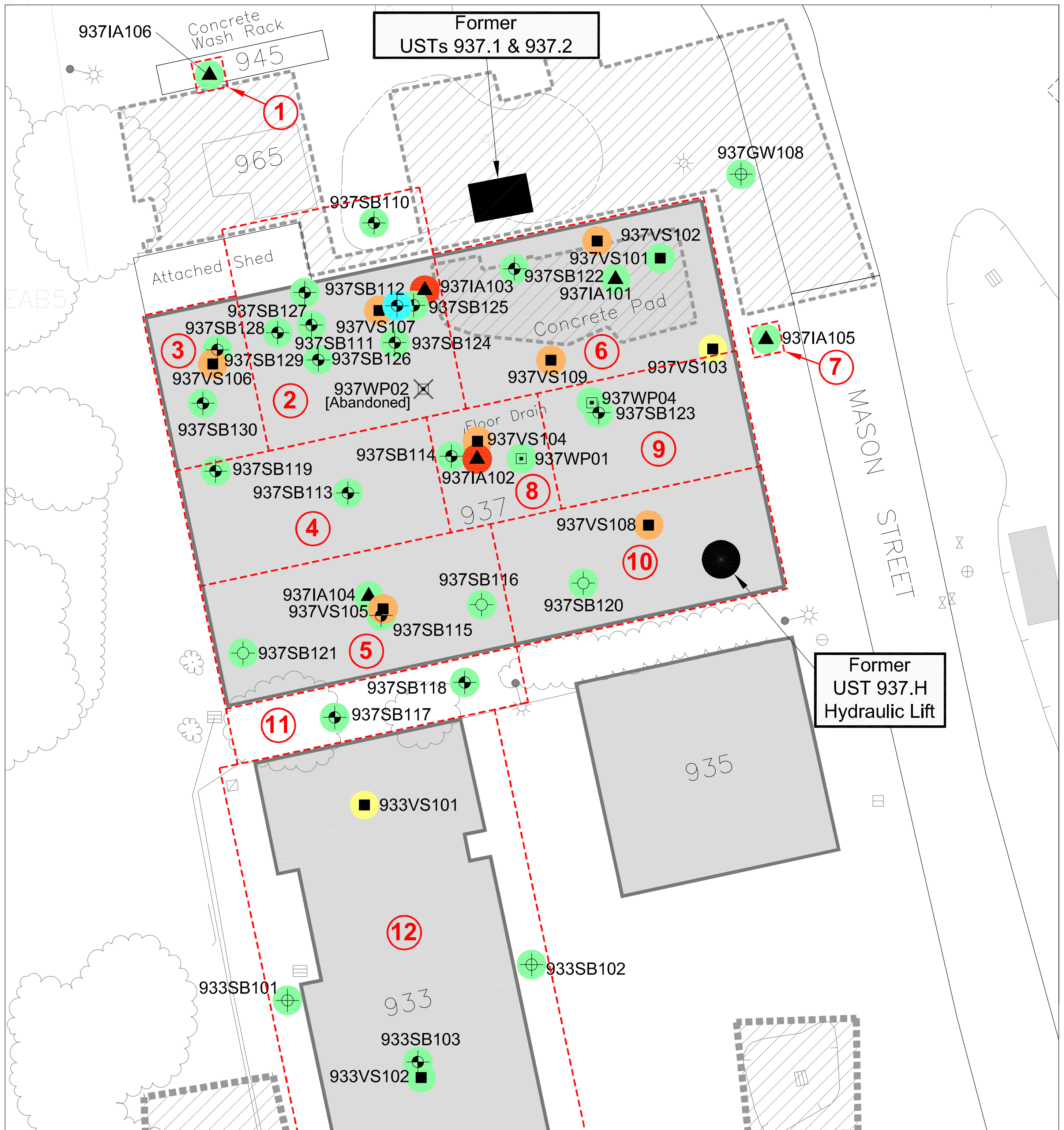
Sample Type	Sample ID	Depth	PCE
Indoor Air	937IA104	NA	<0.68 µg/m^3
Subslab Soil Vapor	937VS105	NA	**2,890** µg/m^3 (4)
			5,340 µg/m^3 (5)
Soil Gas	937SB115	3.5	490 µg/m^3
	937SB116	3.5	130 µg/m^3
	937SB121	4	<100 µg/m^3
Soil	937SB115	2.5	<0.0061 mg/kg
Groundwater	937SB115	3.8 - 8	0.9 µg/L

AREA 11

Sample Type	Sample ID	Depth	PCE
Soil Gas	937SB117	3.5	<100 µg/m^3
	937SB118	3.5	<100 µg/m^3
Groundwater	937SB117	4.7 - 6	<0.5 µg/L
	937SB118	3.6 - 4	<0.5 µg/L

AREA 12 (Building 933)

Sample Type	Sample ID	Depth	PCE
Subslab Soil Vapor	933VS101	NA	**40.6**/<6.78 µg/m^3
	933VS102	NA	6.99 µg/m^3
Soil Gas	933SB103	3.5	<100 µg/m^3
Soil	933SB103	3	<0.0058 mg/kg
Groundwater	933SB101	4 - 8	<0.5 µg/L
	933SB102	3.6 - 8	<0.5 µg/L
	933SB103	3.5 - 6	<0.5 µg/L



N

0 40 80

(Approximate Scale in Feet)

LEGEND

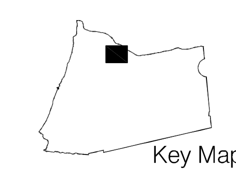
- Former UST Location
- Former Army Excavation Areas
- 937 Existing Building
- Air Sample Location
- Well Point
- Grab Groundwater Sample Location
- Subslab Vapor Sample Location
- Soil Gas Sample Location
- Soil Gas, Soil, and/or Grab Groundwater Sample Location
- (1) Building Area Location
- PCE in Subslab Soil Vapor > RBTC (α =0.01)
- PCE in Subslab Soil Vapor > RBTC (α =0.1)
- PCE in Groundwater > MCL
- PCE in Indoor/Ambient Air > RBTC
- PCE in Sample < All Applicable Screening Levels

Abbreviations:

<	=less than
>	=greater than
µg/L	=micrograms per Liter
µg/m 3	=micrograms per cubic meter
MCL	=Maximum Contaminant Level
mg/kg	=milligrams per kilogram
NA	=Not Applicable
PCE	=tetrachloroethene
RBTC	=Risk–Based Target Concentration
RWQCB ESL	=Regional Water Quality Control Board Environmental Screening Level
UST	=underground storage tank

Notes:

1. All locations are approximate.
2. Basemap provided by the Presidio Trust.
3. Sample survey locations from PLS Surveys, Inc., surveyed 11 July 2006.
4. These subslab vapor samples were collected 1 December 2005.
5. These subslab vapor samples were collected 20 July 2006.
6. Subslab soil vapor samples analyzed by EPA Method TO–15. Samples results exceeding RBTC with α = 0.1 (10 µg/m3 PCE) are indicated in bold. Sample results exceeding RBTC with α = 0.01 (100 µg/m3 PCE) are indicated in bold and underlined.
7. Indoor or ambient air samples analyzed by EPA Method TO–15. Sample results exceeding RTBC (1 µg/m3 PCE) are shown in bold.
8. Soil gas samples analyzed by EPA Method 8260B in mobile laboratory. Sample results exceeding the RBTC (1,400 – 2,200 µg/m3 PCE) corresponding to its sample depth are indicated in bold.
9. Grab groundwater samples analyzed by EPA Method 8260B. Sample results exceeding MCL (5 µg/L PCE) are indicated in bold.
10. Soil samples analyzed by EPA Method 8260B. Sample results exceeding RWQCB ESL (0.24 mg/kg PCE) are indicated in bold.
11. Where two values are indicated, the second value is a duplicate.
12. Sample was analyzed by EPA Method 8260B in a mobile laboratory and duplicate sample was analyzed by EPA Method TO–15 in a fixed laboratory.
13. Groundwater data from quarterly monitoring program (Treadwell & Rollo, 2006). PCE has not been detected in 9 sampling events.



Erler & Kalinowski, Inc.

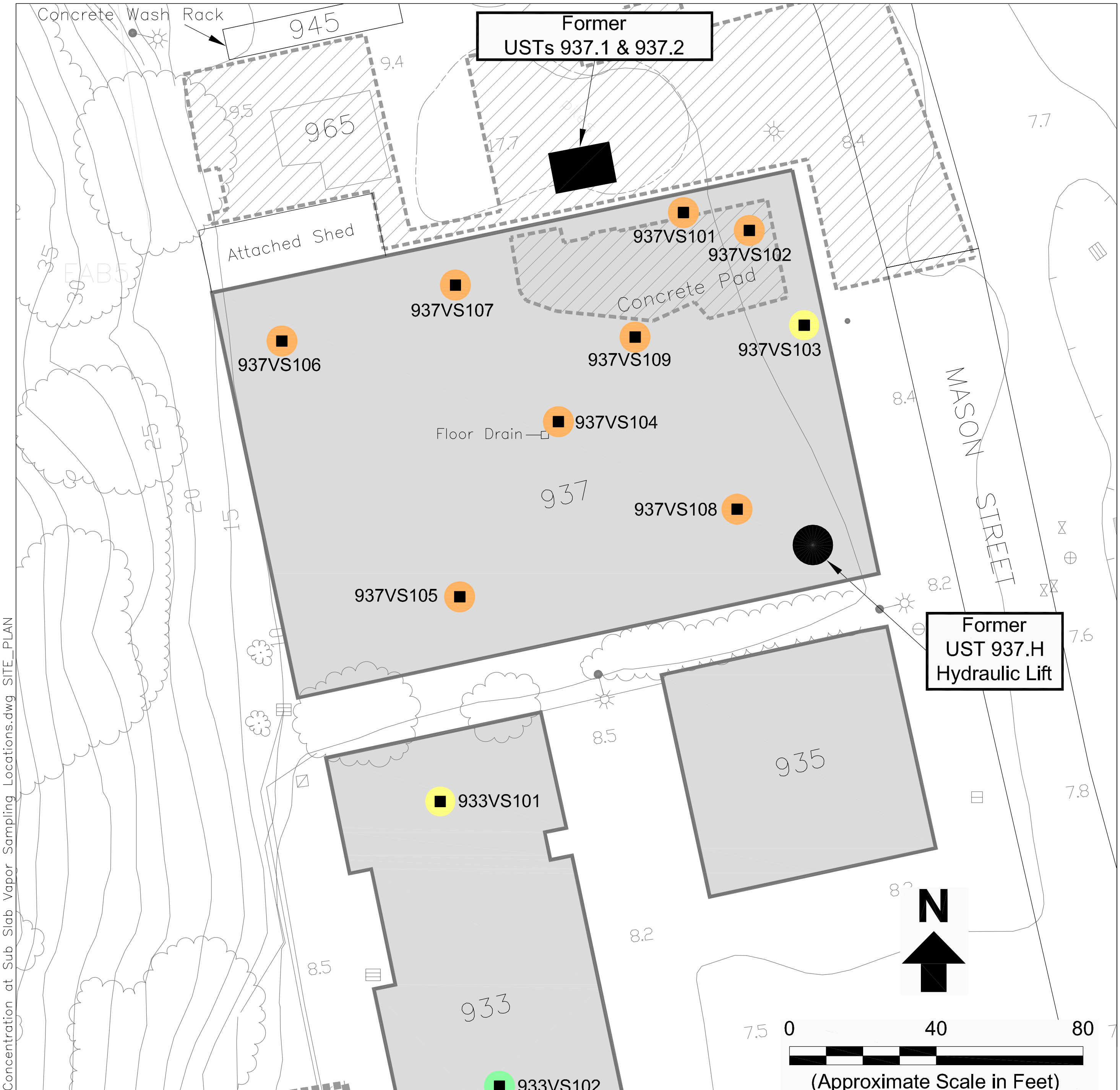
PCE Concentrations at Sampling Locations Buildings 933/937

Presidio Trust
San Francisco, CA
October 2006
EKI A000003.08

Figure 2

THE PRESIDIO TRUST

20061013.10034773 G:\A000003.08\Oct06\Figure 2 – PCE Concentrations at Building 937.dwg SITE_PLAN



Legend:

- Former UST Location
- Former Army Excavation Areas
- 937 Existing Building
- Subslab Vapor Sample Location
- PCE in Subslab Soil Vapor > RBTC (α =0.01)
- PCE in Subslab Soil Vapor > RBTC (α =0.1)
- PCE in Subslab Soil Vapor < RBTC (α =0.1)

Abbreviations:

PCE = Tetrachloroethene
RBTC = Risk Based Target Concentration
UST = underground storage tank

Notes:

1. All locations are approximate.
2. Basemap provided by the Presidio Trust.
3. Sample survey locations from PLS Surveys, Inc., 11 July 2006.

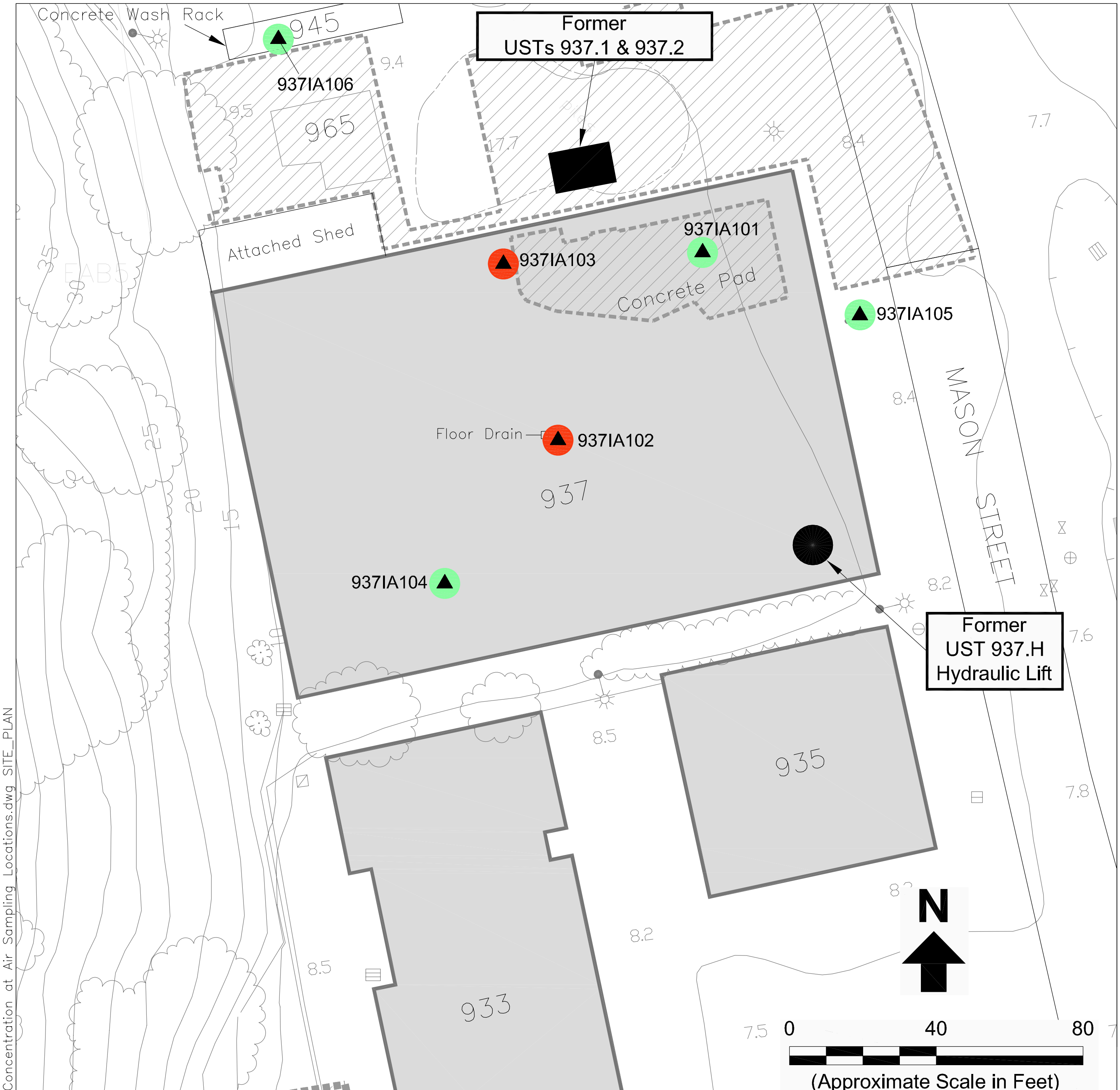
Erler & Kalinowski, Inc.

PCE Concentrations at Subslab Vapor Sampling Locations

Presidio Trust
San Francisco, CA
October 2006
EKI A000003.08

Figure 3

20061013.0959409 G:\A000003.08\Oct06\Figure 3 - PCE Concentration at Sub Slab Vapor Sampling Locations.dwg SITE_PLAN



Legend:

- Former UST Location
- Former Army Excavation Areas
- 937 Existing Building
- Air Sample Location
- PCE in Indoor/Ambient Air > RBTC
- PCE in Indoor/Ambient Air < RBTC

Abbreviations:

PCE = Tetrachloroethene
RBTC = Risk Based Target Concentration
UST = underground storage tank

Notes:

1. All locations are approximate.
2. Basemap provided by the Presidio Trust.
3. Sample survey locations from PLS Surveys, Inc., 11 July 2006.

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PCE Concentrations at Air Sampling Locations

Presidio Trust
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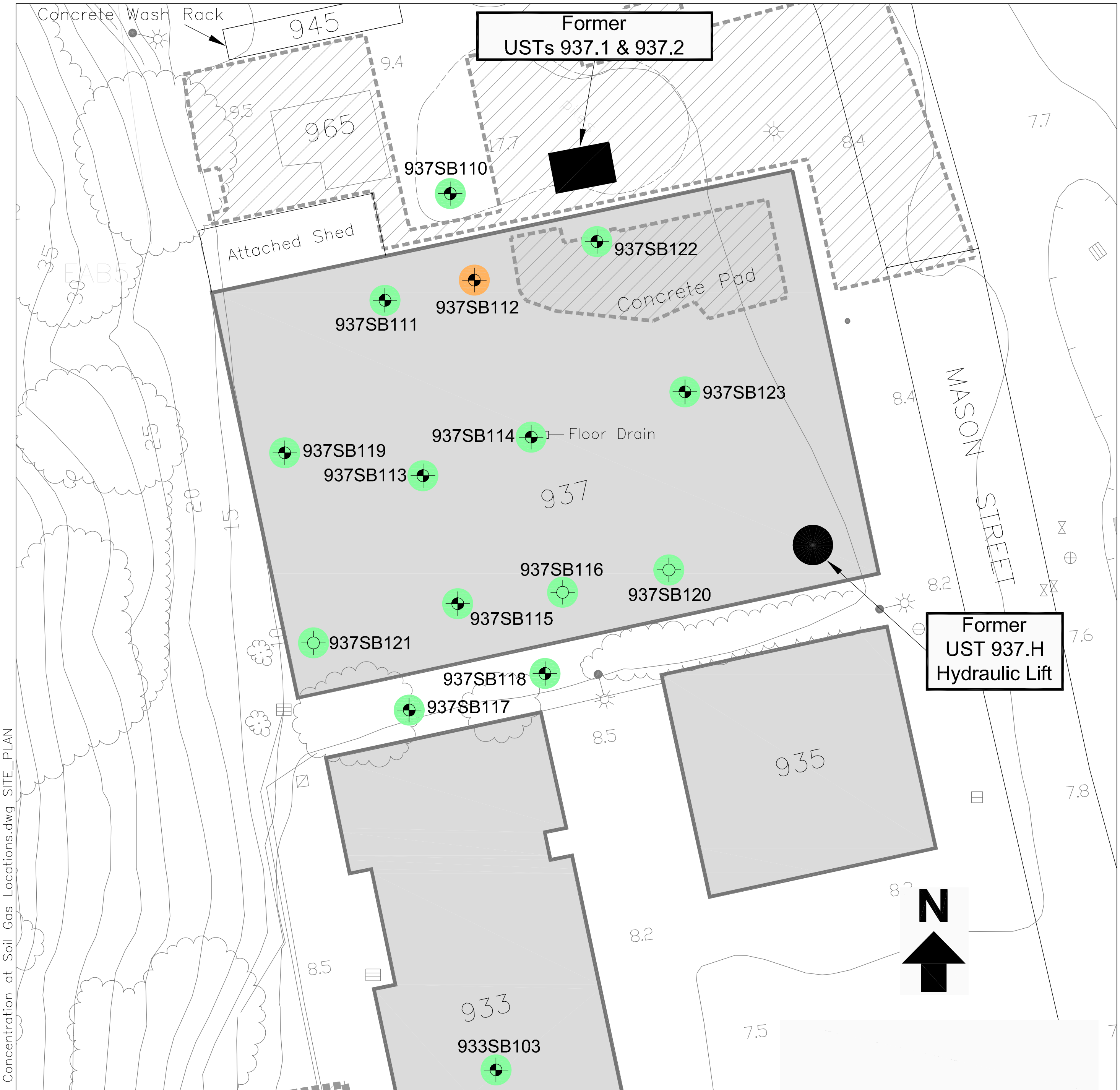
October 2006
EKI A000003.08

Figure 4

20061013.1000356 G:\A000003.08\Oct06\Figure 4 - PCE Concentration at Air Sampling Locations.dwg SITE_PLAN



Lege

Former UST Location

Former Army Excavation Areas

937 Existing Building

Soil Gas Sample Location

cation

Abbreviations:

PCE

Erler & Kalinowski, Inc.

PCE Concentrations at Soil Gas Sampling Locations

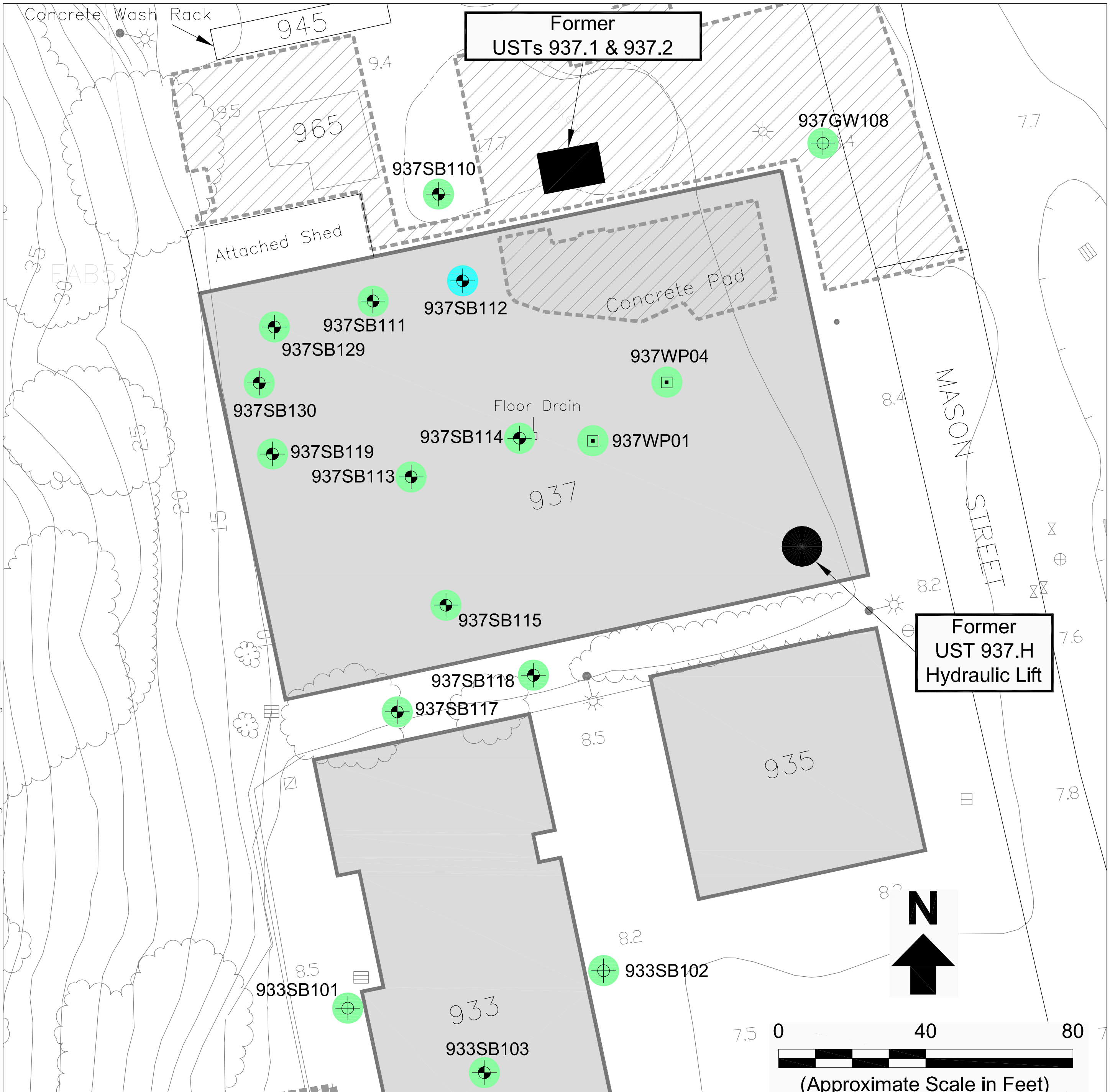
Presidio Trust
San Francisco, CA
October 2006
EKI A000003.08

Figure 5

Notes:

1. All locations are approximate.
2. Basemap provided by the Presidio Trust.
3. Sample survey locations from PLS Surveys, Inc., 11 July 2006.

20061013.10011816 G:\A000003.08\Oct06\Figure 5 - PCE Concentration at Soil Gas Locations.dwg SITE_PLAN



Legend:

- Former UST Location
- Former Army Excavation Areas
- 937 Existing Building
- Well Point
- Grab Groundwater Sample Location
- Soil Gas, Soil, and/or Grab Groundwater Sample Location
- PCE in Groundwater > MCL
- PCE in Groundwater < MCL

Notes:

1. All locations are approximate.
2. Basemap provided by the Presidio Trust.
3. Sample survey locations from PLS Surveys, Inc., 11 July 2006.

Abbreviations:

MCL = Maximum Contaminant Level
PCE = Tetrachloroethene
UST = underground storage tank

Erler & Kalinowski, Inc.

PCE Concentrations at Groundwater Sampling Locations

Presidio Trust
San Francisco, CA

October 2006
EKI A000003.08

Figure 6

20061013.10015533 G:\A000003.08\Oct06\Figure 6 - PCE Concentrations at Groundwater Sampling Locations.dwg SITE_PLAN

APPENDIX A

DATA QUALITY OBJECTIVES TABLES
FROM
13 OCTOBER 2005 FIELD SAMPLING PLAN
AND
19 APRIL 2006 FIELD SAMPLING PLAN ADDENDUM

TABLE 1 - BUILDING 937 DATA QUALITY OBJECTIVES

Presidio of San Francisco, California

State the Problem	Identify the Decisions	Identify Inputs to the Decisions	Define the Study Boundaries	Develop Decision Rules	Specify Limits on Decision Errors	Optimize the Design
Ethylbenzene and petroleum hydrocarbons ("TPH") have been detected in soil and TPH in groundwater at or above applicable Crissy Field RAP cleanup levels at the northeastern corner of Building 937. Benzene, toluene, ethylbenzene, and xylenes have been detected in soil samples at levels that are slightly greater RWQCB Environmental Screening Levels in indoor air for commercial receptors. Therefore, there is a potential for indoor air exposure to petroleum hydrocarbons and volatile organic compounds ("VOCs"). Two former underground storage tanks (937.1 and 937.2) in the northeastern corner of the building that were used by the Army to store xylenes and waste oil are believed to be the primary source of residual petroleum hydrocarbons and VOCs in soil and groundwater in the Building 937 Area. The Army removed the tanks and performed remedial actions; however, impacted soil near the building foundation could not be removed without compromising the building's structural integrity. There were also a former hydraulic lift and associated UST (UST 937.H) in the southeastern portion of Building 937 where petroleum hydrocarbons were reportedly observed in soil. The Trust plans to lease Building 937 to tenants for recreational/commercial use. DTSC has expressed concern that residual chemicals in soil and groundwater may be a source of volatile chemicals into the indoor air of the building. This sampling program is proposed to evaluate whether residual subsurface chemicals pose a significant risk to future recreational or commercial building occupants through the indoor air exposure pathway.	1. Are residual petroleum hydrocarbons and VOCs from previous Army impacts present in the subslab vapor below Building 937? 2. If residual petroleum hydrocarbons and VOCs are present in the subslab vapor, are they present at concentrations that are potentially a significant risk (i.e., greater than 10^{-6} lifetime incremental cancer risk or a cumulative noncancer hazard index ("HI") >1)? 3. If petroleum hydrocarbons and VOCs are present in subslab vapor, are these same chemicals also present in indoor air? 4. If petroleum hydrocarbons and VOCs are present in indoor air, is there a geographic distribution of the concentrations within the building? 5. Are the petroleum hydrocarbons and VOCs detected in the subslab vapor and indoor air samples also present in ambient air samples? 6. Are petroleum hydrocarbons and VOCs present in indoor air at concentrations that pose a significant risk relative to ambient air and background (e.g., non-subsurface contributions), as shown in the table in Contingency Planning section of the DTSC Guidance (Step 8, page 29)? 7. If petroleum hydrocarbons and VOCs are present in subslab vapor and indoor air, are mitigation measures appropriate to reduce the potential risk for the building occupants?	1. Results of previous chemical analysis of soil and groundwater samples. 2. Results of chemical analysis from 2 rounds of subslab vapor samples collected 3 to 6 months apart. 3. Results of chemical analysis of indoor air samples (including ambient samples), if collected. 4. DTSC Guidance (e.g., subslab vapor intrusion factors in Step 6 and potential response actions to be taken from the table in Contingency Planning section of Step 8).	The study boundaries for the subslab investigation are within the footprint of Building 937. If indoor air samples are collected, the samples will be collected within Building 937 and outside of the building at locations representative of ambient conditions, in accordance with the DTSC Guidance.	1. If the detected chemical concentrations in subslab vapor samples result in a calculated cumulative risk associated with vapor intrusion above 10^{-6} or a HI= 1, the Trust will collect indoor air samples. Otherwise, indoor air samples will not be collected, and no significant risk will be attributable to residual subsurface chemicals. Potentially exposed populations and exposure assumptions to assess vapor intrusion risks are presented in the attached Tables 2 and 3. 2. Per DTSC Guidance, if indoor air samples are collected, the indoor air samples (and associated ambient samples) will only be analyzed for those chemicals detected in subslab vapor analyses. 3. If indoor air samples are to be collected, the samples will be collected as soon as possible after the subslab vapor sample results are available and have been evaluated. 4. If indoor air samples are collected, to achieve the DTSC Guidance recommendation for analyses over seasonal differences, a second round of indoor air samples will be collected within 3 to 6 months after the initial sample. 5. Per U.S. EPA Guidance, the ratios of VOCs in indoor air samples will be compared to the ratios of the same VOCs in subslab vapor samples to distinguish subsurface-derived VOCs from non-subsurface sources (i.e., indoor air and ambient air sources). If these ratios are different then the VOCs in indoor air are not originating from the subslab vapor (i.e., vapor intrusion is not a complete pathway) and those chemicals will not be included in the evaluation of risk due to vapor intrusion. 6. The risks of chemicals detected in ambient air samples and indoor air samples will be calculated. The risk associated with chemicals in ambient air will be included in the assessment of the significance of indoor air risk.	1. Field, analytical, and data validation procedures will follow the QAPP (Tetra Tech, 2001), as modified to follow DTSC Guidance. Duplicate samples (subslab and indoor air) will also be collected per the QAPP. 2. If no chemicals on the analyte list are detected in any of the indoor air samples or ambient air samples from a single round, the Trust will discuss the results with the laboratory and ascertain if other VOCs were detected but not reported by the laboratory. If no VOCs were detected, in keeping with the DTSC Guidance, the data will be rejected and the sampling event repeated.	Building 937 is approximately 110' x 160', with no interior walls, with open rafters allowing ventilation through roof vents. The Trust understands that tenants will subdivide into several large spaces. 1. Nine subslab vapor samples will be collected from locations below Building 937, as shown on Figure 1. Subslab vapor sample locations will be oriented based on known data from the building history. Samples will be collected from above the backfill of the former tank excavation in the northeastern corner of the Building 937, and will fan out away from the source area to the southwest. Two samples will be collected near the northeastern corner wall where residual chemicals could not be removed during remedial actions. Another sample will be collected near the centrally located floor drain, in accordance with DTSC Guidance. Three more samples will be collected around the edges of the excavation limit. Two more samples will be collected in the southwestern portion of the building, and one sample will be collected near the former hydraulic lift. Subslab vapor samples will be collected in SUMMA canisters and analyzed for the full scan of volatile organics with tentatively identified compounds ("TICs") by US EPA Method TO-15 for quantitative results. Samples will be collected over approximately 20 minutes or as reasonable to fill the SUMMA canister. 2. Indoor air samples, if collected, will be collected as soon as reasonably possibly after review of subslab vapor sample results. Indoor air samples and ambient samples will be collected in SUMMA canisters and will be analyzed by US EPA Method TO-15 only for chemicals detected in the subslab vapor, in accordance with the DTSC Guidance. Indoor air samples will be collected over an 8-hour period to reflect the commercial and recreational (i.e., non-residential) exposure scenarios. Ambient air samples will be staggered to initiate collection 1 to 2 hours before indoor air samples, and terminate collection approximately 30 minutes before the indoor air samples, per the DTSC Guidance. Indoor air sampling will be conducted at 3 locations within Building 937 and 2 locations outside the building (see Figure 1). Potential indoor air samples will be collected near the northeastern wall by the former excavation area, near the central floor drain, and in the southwestern portion corner of the building. Sample inlets will be approximately 3 feet above the floor. Ambient air samples will be collected outside the building near the former concrete ramp structure at the northwestern corner of the building, and near the roll up doors at the northeastern corner of the building. The ambient air sampling locations were selected to be upwind of the building and to avoid physical features such as other buildings and hillsides that could block the wind on the sides of the building, as recommended by the DTSC Guidance.

<u>Abbreviations:</u>

DTSC	Department of Toxic Substances Control, California Environmental Protection Agency
DTSC Guidance	*Interim Final, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*, DTSC, dated 7 February 2005.
HI	Hazard Index
QAPP	*Presidio-Wide Quality Assurance Project Plan, Sampling and Analysis Plan*, Tetra Tech EM Inc., dated April 2001.
RWQCB	Regional Water Quality Control Board
TPH	total petroleum hydrocarbons
U.S. EPA Guidance	*Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*, U.S. Environmental Protection Agency, dated November 2002.
VOCs	volatile organic compounds

TABLE 3 - DATA QUALITY OBJECTIVES
BUILDING 937 VAPOR INTRUSION STUDY ADDENDUM
Presidio of San Francisco, California

State the Problem	Identify the Decisions	Identify Inputs to the Decisions	Define the Study Boundaries	Develop Decision Rules	Specify Limits on Decision Errors	Optimize the Design
Concentrations of tetrachloroethene ("PCE") above site-specific risk-based action levels have been found in subslab vapor samples collected below Building 937. Trichloroethene ("TCE") has also been found in one subslab vapor sample above action levels. While Building 937 was previously believed to contain residual petroleum hydrocarbon contamination and potentially chlorinated solvents in the former tank area, the observed PCE and TCE concentrations in the subslab vapor are highest outside of the area of suspected petroleum hydrocarbon impact. PCE has been detected below maximum contaminant levels ("MCLs") in both historical and on-going groundwater monitoring in the Building 900s Area. TCE has been detected above the MCL in on-going groundwater monitoring in the Building 900s Area. There are insufficient groundwater chemical data from the immediate area in and around Building 937 to determine the location of the source of PCE (and TCE) in the Building 937 subslab vapor samples. The grab groundwater sampling proposed in this field sampling plan addendum will supplement existing groundwater data. The presence of PCE and other chlorinated solvents in soil gas in the Building 937 Area has not been characterized. Proposed soil gas sampling will determine whether VOCs are present in soil gas and potentially identify the location of the source of PCE and other chlorinated solvents in the subsurface. In addition, the sources of PCE may be located south of Building 937 (e.g., near or under Building 933). Subslab vapor, soil gas, and groundwater sampling has not been performed below the northern end of Building 933.	1. Are PCE or other volatile organic compounds ("VOCs") detected in sub-slab vapor samples present in soil gas below Building 937? 2. Are PCE or other VOCs detected in subslab vapor samples present in groundwater below or south of Building 937? 3. If PCE or other VOCs are found in groundwater at a higher concentration than previously detected in historic groundwater samples or on-going groundwater monitoring, can the source of the contamination be identified? 4. If PCE or other VOCs are found in soil gas, can the source of the contamination be identified? 5. If PCE or other VOCs are present in groundwater, is groundwater remediation necessary? 6. If PCE or other VOCs are present in soil gas, is vadose zone remediation necessary? 7. If PCE or other VOCs are present in the soil, is vadose zone remediation necessary? 8. Are VOCs present above the risk-based action levels or Crissy Field cleanup levels in subslab vapor, soil, or groundwater below Building 933?	1. Results of previous chemical analysis of soil and groundwater samples from near and within Building 937. 2. Results of chemical analysis from subslab vapor sampling at Building 937. 3. Results of chemical analysis of groundwater, soil gas, and soil samples to be collected in the Building 937 Area. Soil gas samples are proposed to be analyzed in a mobile lab to allow for field decisions to be made regarding soil gas and soil sampling locations. 4. Results of Building 937 indoor air samples. 5. Physical properties from vadose zone sampling that will be used to develop site-specific soil, soil gas, and groundwater screening levels based on the vapor intrusion pathway. 6. Results of chemical analysis from sampling at Building 933.	The study boundary for the characterization investigation is the Building 937 Area, including the area south of Building 937 (an area in and around the northern portion of Building 933) to Building 945, an area north of Building 937.	During the soil gas investigation, as a conservative measure, if detected VOC concentrations in soil gas exceed residential California Human Health Screening Levels ("CHHSLs"), then a soil sample will be collected from that particular boring location. If detected VOC concentrations in soil gas exceed commercial/ industrial CHHSLs, then up to 3 soil samples may be collected from adjacent boring locations. If three or more soil gas samples trigger this clause, the appropriateness of the adjacent soil sampling will be discussed with the Trust, NPS, and DTSC. If concentrations of PCE or other VOCs in groundwater exceed applicable Crissy Field RAP groundwater cleanup levels, further characterization and potential remedial actions will be evaluated. If concentrations of PCE or other VOCs in groundwater exceed site-specific screening levels that could result in unacceptable concentrations of VOCs in indoor air through vapor intrusion, potential remedial actions will be evaluated. If concentrations of PCE or other VOCs in groundwater samples are below applicable Crissy Field groundwater cleanup levels and site-specific groundwater screening levels based on the vapor intrusion pathway, no further evaluation or action relative to groundwater is necessary. If concentrations of PCE or other VOCs are detected in soil or soil gas above site-specific screening levels based on the vapor intrusion pathway, then potential remedial actions will be evaluated. If concentrations of PCE or other VOCs are detected in soil and soil gas at less than site-specific screening levels based on the vapor intrusion pathway, then no further action relative to soil and soil gas is necessary. If the detected chemical concentrations in subslab vapor samples from Building 933 result in a calculated cumulative risk associated with vapor intrusion above 10^{-6} or a HI= 1, the Trust will collect indoor air samples in accordance with the Building 937 Field Sampling Plan dated 13 October 2005. Otherwise, indoor air samples will not be collected from Building 933. If concentrations of VOCs in soil or groundwater from samples from Building 933 exceed risk-based action levels or applicable Crissy Field cleanup levels, further characterization and potential remedial actions will be evaluated.	1. Field, analytical, and data validation procedures will follow the QAPP (Tetra Tech, 2001) to the extent possible. Duplicate samples (soil vapor and grab groundwater) will also be collected per the QAPP. 2. The mobile lab will not be able to meet the QAPP requirements for Level III and Level IV data packages. The Trust will collect duplicates for 10% of the soil gas samples in SUMMA canisters and send them to a fixed laboratory for analysis and data validation. 3. A potential error in evaluation of groundwater, soil, and soil gas samples would be to incorrectly quantify the chemicals present in groundwater, soil, or soil gas. The acceptable range of decision error would be a consequence of field and/or analytical errors and will be evaluated during the data validation procedures.	1. Up to fifteen new soil borings (937SB110 through 937SB121; and 933SB101 through 933SB103) will be installed, as shown on Figure 2: • At 10 of these boring locations both soil gas and grab groundwater samples will be collected. • At 3 boring locations inside Building 937 along the southern wall only soil gas samples will be collected (937SB115, 937SB116, and 937SB121). • At the 2 borings south of Building 937, to the east and west of Building 933, only grab groundwater samples will be collected (933SB101 and 933SB102). • Borings 937SB119, 937SB120, and 937SB121 may be moved or deleted based on soil gas results from other borings. 2. Grab groundwater samples will be collected at the two existing well points inside Building 937 (937WP01 and 937WP04). 3. Soil borings will be installed to collect grab groundwater samples at first encountered groundwater. Grab groundwater samples will be analyzed for VOCs using US EPA Method 8260. 4. Probes will be advanced to collect soil gas samples at approximately five feet below ground surface. Soil gas samples will be collected in a gas-tight syringe and analyzed by a mobile laboratory for VOCs using US EPA Method 8260. Duplicates of 10% of the soil gas samples will be collected in SUMMA canisters and analyzed at a fixed laboratory by US EPA Method TO-15. 5. Soil samples, if collected based on results of soil gas data, will be collected from approximately 2 feet below ground surface and analyzed for VOCs by EPA Method 8260B. 6. Two subslab vapor samples (933VS101 and 933VS102) will be collected from locations below the northern end of Building 933, as shown on Figure 2. Subslab vapor samples will be collected in SUMMA canisters and analyzed for the full scan of volatile organics with tentatively identified compounds ("TICs") by US EPA Method TO-15 for quantitative results. Samples will be collected over approximately 20 minutes or as reasonable to fill the SUMMA canister. 7. At the request of a potential future Trust tenant, a soil sample and a groundwater sample will be collected from 933SB103 from approximately 8 feet below ground surface and analyzed for VOCs by EPA Method 8260B, Title 22 metals, and total petroleum hydrocarbons.

<u>Abbreviations:</u>

CHHSLs	California Human Health Screening Levels
MCLs	maximum contaminant levels
QAPP	*Presidio-Wide Quality Assurance Project Plan, Sampling and Analysis Plan*, Tetra Tech EM Inc., dated April 2001.
PCE	Tetrachloroethene
TCE	Trichloroethene
VOCs	volatile organic compounds

APPENDIX B

LABORATORY ANALYTICAL REPORTS

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 12/23/05

TO: MS. MICHELLE KING & MR. ADAM ABELES
ERLER & KALINOWSKI, INC.
1870 OGDEN DRIVE
BURLINGAME, CA 94010

Phone: 650-292-9100
Fax: 650-552-9012
EMAIL: mkking@ekiconsult.com
aabeles@ekiconsult.com

ACCT: 9115
PROJ: A000003.08

FROM: Richard A. Kagel, Ph.D. RAK 12/23/05
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT A000003.08

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	KPI LAB #
937VS101	AIR	12/01/05	53375
937VS102	AIR	12/01/05	53376
937VS103	AIR	12/01/05	53377
937VS104	AIR	12/01/05	53378
937VS105	AIR	12/01/05	53379
937VS106	AIR	12/01/05	53380
937VS107	AIR	12/01/05	53381
937VS107 DUP	AIR	12/01/05	53382
937VS108	AIR	12/01/05	53383
937VS109	AIR	12/01/05	53384

The above listed sample group was received on 12/01/05 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS101
LAB NO: 53375
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:13
BATCH ID: 121805A01
DATE ANALYZED: 12/18/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	1.21	3.19	3.87
TRICHLOROETHENE	79-01-6	1.00	1.56	5.37	8.38
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	1.49	3.77	5.61
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	2.53	6.78	17.2
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	2.01	4.34	8.73
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	1.16	4.92	5.70
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MMC
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS102
LAB NO: 53376
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:10
BATCH ID: 121805A01
DATE ANALYZED: 12/18/05

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	ND	3.19	ND
TRICHLOROETHENE	79-01-6	1.00	ND	5.37	ND
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	ND	6.78	ND
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: rmk
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS103
LAB NO: 53377
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:57
BATCH ID: 121805A01
DATE ANALYZED: 12/18/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	ND	3.19	ND
TRICHLOROETHENE	79-01-6	1.00	ND	5.37	ND
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	1.01	3.77	3.81
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	6.45	6.78	43.8
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	1.75	4.34	7.60
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [signature]
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS104
LAB NO: 53378
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:38
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	2.00	ND	9.89	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	2.00	ND	14.0	ND
CHLOROMETHANE	74-87-3	2.00	ND	4.13	ND
VINYL CHLORIDE	75-01-4	2.00	ND	5.11	ND
BROMOMETHANE	74-83-9	2.00	ND	7.77	ND
CHLOROETHANE	75-00-3	2.00	ND	5.28	ND
TRICHLOROFLUOROMETHANE	75-69-4	2.00	ND	11.2	ND
1,1-DICHLOROETHENE	75-35-4	2.00	ND	7.93	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	2.00	ND	15.3	ND
METHYLENE CHLORIDE	75-09-2	2.00	ND	6.95	ND
1,1-DICHLOROETHANE	75-34-3	2.00	ND	8.10	ND
CIS-1,2-DICHLOROETHENE	156-59-2	2.00	ND	7.93	ND
CHLOROFORM	67-66-3	2.00	ND	9.77	ND
1,1,1-TRICHLOROETHANE	71-55-6	2.00	22.9	10.9	125
CARBON TETRACHLORIDE	56-23-5	2.00	ND	12.6	ND
1,2-DICHLOROETHANE	107-06-2	2.00	ND	8.09	ND
BENZENE	71-43-2	2.00	ND	6.39	ND
TRICHLOROETHENE	79-01-6	2.00	ND	10.7	ND
1,2-DICHLOROPROPANE	78-87-5	2.00	ND	9.24	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	2.00	ND	9.08	ND
TOLUENE	108-88-3	2.00	ND	7.54	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	2.00	ND	9.08	ND
1,1,2-TRICHLOROETHANE	79-00-5	2.00	ND	10.9	ND
TETRACHLOROETHENE	127-18-4	2.00	66.4	13.6	450
1,2-DIBROMOETHANE	106-93-4	2.00	ND	15.4	ND
CHLOROBENZENE	108-90-7	2.00	ND	9.21	ND
ETHYLBENZENE	100-41-4	2.00	ND	8.68	ND
XYLENE (M+P)	1330-20-7	2.00	ND	8.68	ND
XYLENE (O)	95-47-6	2.00	ND	8.68	ND
STYRENE	100-42-5	2.00	ND	8.52	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00	ND	13.7	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	2.00	ND	9.83	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	2.00	ND	9.83	ND
1,3-DICHLOROBENZENE	541-73-1	2.00	ND	12.0	ND
1,4-DICHLOROBENZENE	106-46-7	2.00	ND	12.0	ND
1,2-DICHLOROBENZENE	95-50-1	2.00	ND	12.0	ND
1,2,4-TRICHLOROBENZENE	120-82-1	2.00	ND	14.8	ND
HEXACHLOROBUTADIENE	87-68-3	2.00	ND	21.3	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [illegible]
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS105
LAB NO: 53379
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:32
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	10.0	ND	49.5	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	10.0	ND	69.9	ND
CHLOROMETHANE	74-87-3	10.0	ND	20.7	ND
VINYL CHLORIDE	75-01-4	10.0	ND	25.6	ND
BROMOMETHANE	74-83-9	10.0	ND	38.8	ND
CHLOROETHANE	75-00-3	10.0	ND	26.4	ND
TRICHLOROFLUOROMETHANE	75-69-4	10.0	ND	56.2	ND
1,1-DICHLOROETHENE	75-35-4	10.0	ND	39.7	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	10.0	ND	76.6	ND
METHYLENE CHLORIDE	75-09-2	10.0	ND	34.7	ND
1,1-DICHLOROETHANE	75-34-3	10.0	ND	40.5	ND
CIS-1,2-DICHLOROETHENE	156-59-2	10.0	ND	39.7	ND
CHLOROFORM	67-66-3	10.0	ND	48.8	ND
1,1,1-TRICHLOROETHANE	71-55-6	10.0	ND	54.6	ND
CARBON TETRACHLORIDE	56-23-5	10.0	ND	62.9	ND
1,2-DICHLOROETHANE	107-06-2	10.0	ND	40.5	ND
BENZENE	71-43-2	10.0	ND	31.9	ND
TRICHLOROETHENE	79-01-6	10.0	222	53.7	1190
1,2-DICHLOROPROPANE	78-87-5	10.0	ND	46.2	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	10.0	ND	45.4	ND
TOLUENE	108-88-3	10.0	ND	37.7	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	10.0	ND	45.4	ND
1,1,2-TRICHLOROETHANE	79-00-5	10.0	ND	54.6	ND
TETRACHLOROETHENE	127-18-4	10.0	426	67.8	2890
1,2-DIBROMOETHANE	106-93-4	10.0	ND	76.8	ND
CHLOROBENZENE	108-90-7	10.0	ND	46.0	ND
ETHYLBENZENE	100-41-4	10.0	ND	43.4	ND
XYLENE (M+P)	1330-20-7	10.0	ND	43.4	ND
XYLENE (O)	95-47-6	10.0	ND	43.4	ND
STYRENE	100-42-5	10.0	ND	42.6	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	10.0	ND	68.7	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	10.0	ND	49.2	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	10.0	ND	49.2	ND
1,3-DICHLOROBENZENE	541-73-1	10.0	ND	60.1	ND
1,4-DICHLOROBENZENE	106-46-7	10.0	ND	60.1	ND
1,2-DICHLOROBENZENE	95-50-1	10.0	ND	60.1	ND
1,2,4-TRICHLOROBENZENE	120-82-1	10.0	ND	74.2	ND
HEXACHLOROBUTADIENE	87-68-3	10.0	ND	107	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MMC
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS106
LAB NO: 53380
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:25
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	2.00	ND	9.89	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	2.00	ND	14.0	ND
CHLOROMETHANE	74-87-3	2.00	ND	4.13	ND
VINYL CHLORIDE	75-01-4	2.00	ND	5.11	ND
BROMOMETHANE	74-83-9	2.00	ND	7.77	ND
CHLOROETHANE	75-00-3	2.00	ND	5.28	ND
TRICHLOROFLUOROMETHANE	75-69-4	2.00	ND	11.2	ND
1,1-DICHLOROETHENE	75-35-4	2.00	ND	7.93	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	2.00	ND	15.3	ND
METHYLENE CHLORIDE	75-09-2	2.00	ND	6.95	ND
1,1-DICHLOROETHANE	75-34-3	2.00	ND	8.10	ND
CIS-1,2-DICHLOROETHENE	156-59-2	2.00	ND	7.93	ND
CHLOROFORM	67-66-3	2.00	ND	9.77	ND
1,1,1-TRICHLOROETHANE	71-55-6	2.00	11.2	10.9	60.9
CARBON TETRACHLORIDE	56-23-5	2.00	ND	12.6	ND
1,2-DICHLOROETHANE	107-06-2	2.00	ND	8.09	ND
BENZENE	71-43-2	2.00	ND	6.39	ND
TRICHLOROETHENE	79-01-6	2.00	ND	10.7	ND
1,2-DICHLOROPROPANE	78-87-5	2.00	ND	9.24	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	2.00	ND	9.08	ND
TOLUENE	108-88-3	2.00	ND	7.54	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	2.00	ND	9.08	ND
1,1,2-TRICHLOROETHANE	79-00-5	2.00	ND	10.9	ND
TETRACHLOROETHENE	127-18-4	2.00	69.9	13.6	474
1,2-DIBROMOETHANE	106-93-4	2.00	ND	15.4	ND
CHLOROBENZENE	108-90-7	2.00	ND	9.21	ND
ETHYLBENZENE	100-41-4	2.00	ND	8.68	ND
XYLENE (M+P)	1330-20-7	2.00	ND	8.68	ND
XYLENE (O)	95-47-6	2.00	ND	8.68	ND
STYRENE	100-42-5	2.00	ND	8.52	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00	ND	13.7	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	2.00	ND	9.83	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	2.00	ND	9.83	ND
1,3-DICHLOROBENZENE	541-73-1	2.00	ND	12.0	ND
1,4-DICHLOROBENZENE	106-46-7	2.00	ND	12.0	ND
1,2-DICHLOROBENZENE	95-50-1	2.00	ND	12.0	ND
1,2,4-TRICHLOROBENZENE	120-82-1	2.00	ND	14.8	ND
HEXACHLOROBUTADIENE	87-68-3	2.00	ND	21.3	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MAK
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS107
LAB NO: 53381
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:19
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	20.0	ND	98.9	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	20.0	ND	140	ND
CHLOROMETHANE	74-87-3	20.0	ND	41.3	ND
VINYL CHLORIDE	75-01-4	20.0	ND	51.1	ND
BROMOMETHANE	74-83-9	20.0	ND	77.7	ND
CHLOROETHANE	75-00-3	20.0	ND	52.8	ND
TRICHLOROFLUOROMETHANE	75-69-4	20.0	ND	112	ND
1,1-DICHLOROETHENE	75-35-4	20.0	ND	79.3	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	20.0	ND	153	ND
METHYLENE CHLORIDE	75-09-2	20.0	ND	69.5	ND
1,1-DICHLOROETHANE	75-34-3	20.0	ND	81.0	ND
CIS-1,2-DICHLOROETHENE	156-59-2	20.0	ND	79.3	ND
CHLOROFORM	67-66-3	20.0	ND	97.7	ND
1,1,1-TRICHLOROETHANE	71-55-6	20.0	ND	109	ND
CARBON TETRACHLORIDE	56-23-5	20.0	ND	126	ND
1,2-DICHLOROETHANE	107-06-2	20.0	ND	80.9	ND
BENZENE	71-43-2	20.0	ND	63.9	ND
TRICHLOROETHENE	79-01-6	20.0	ND	107	ND
1,2-DICHLOROPROPANE	78-87-5	20.0	ND	92.4	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	20.0	ND	90.8	ND
TOLUENE	108-88-3	20.0	ND	75.4	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	20.0	ND	90.8	ND
1,1,2-TRICHLOROETHANE	79-00-5	20.0	ND	109	ND
TETRACHLOROETHENE	127-18-4	20.0	854	136	5790
1,2-DIBROMOETHANE	106-93-4	20.0	ND	154	ND
CHLOROBENZENE	108-90-7	20.0	ND	92.1	ND
ETHYLBENZENE	100-41-4	20.0	ND	86.8	ND
XYLENE (M+P)	1330-20-7	20.0	ND	86.8	ND
XYLENE (O)	95-47-6	20.0	ND	86.8	ND
STYRENE	100-42-5	20.0	ND	85.2	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	20.0	ND	137	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	20.0	ND	98.3	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	20.0	ND	98.3	ND
1,3-DICHLOROBENZENE	541-73-1	20.0	ND	120	ND
1,4-DICHLOROBENZENE	106-46-7	20.0	ND	120	ND
1,2-DICHLOROBENZENE	95-50-1	20.0	ND	120	ND
1,2,4-TRICHLOROBENZENE	120-82-1	20.0	ND	148	ND
HEXACHLOROBUTADIENE	87-68-3	20.0	ND	213	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [signature]
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS107 DUP
LAB NO: 53382
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:19
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	20.0	ND	98.9	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	20.0	ND	140	ND
CHLOROMETHANE	74-87-3	20.0	ND	41.3	ND
VINYL CHLORIDE	75-01-4	20.0	ND	51.1	ND
BROMOMETHANE	74-83-9	20.0	ND	77.7	ND
CHLOROETHANE	75-00-3	20.0	ND	52.8	ND
TRICHLOROFLUOROMETHANE	75-69-4	20.0	ND	112	ND
1,1-DICHLOROETHENE	75-35-4	20.0	ND	79.3	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	20.0	ND	153	ND
METHYLENE CHLORIDE	75-09-2	20.0	ND	69.5	ND
1,1-DICHLOROETHANE	75-34-3	20.0	ND	81.0	ND
CIS-1,2-DICHLOROETHENE	156-59-2	20.0	ND	79.3	ND
CHLOROFORM	67-66-3	20.0	ND	97.7	ND
1,1,1-TRICHLOROETHANE	71-55-6	20.0	ND	109	ND
CARBON TETRACHLORIDE	56-23-5	20.0	ND	126	ND
1,2-DICHLOROETHANE	107-06-2	20.0	ND	80.9	ND
BENZENE	71-43-2	20.0	ND	63.9	ND
TRICHLOROETHENE	79-01-6	20.0	ND	107	ND
1,2-DICHLOROPROPANE	78-87-5	20.0	ND	92.4	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	20.0	ND	90.8	ND
TOLUENE	108-88-3	20.0	ND	75.4	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	20.0	ND	90.8	ND
1,1,2-TRICHLOROETHANE	79-00-5	20.0	ND	109	ND
TETRACHLOROETHENE	127-18-4	20.0	880	136	5970
1,2-DIBROMOETHANE	106-93-4	20.0	ND	154	ND
CHLOROBENZENE	108-90-7	20.0	ND	92.1	ND
ETHYLBENZENE	100-41-4	20.0	ND	86.8	ND
XYLENE (M+P)	1330-20-7	20.0	ND	86.8	ND
XYLENE (O)	95-47-6	20.0	ND	86.8	ND
STYRENE	100-42-5	20.0	ND	85.2	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	20.0	ND	137	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	20.0	ND	98.3	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	20.0	ND	98.3	ND
1,3-DICHLOROBENZENE	541-73-1	20.0	ND	120	ND
1,4-DICHLOROBENZENE	106-46-7	20.0	ND	120	ND
1,2-DICHLOROBENZENE	95-50-1	20.0	ND	120	ND
1,2,4-TRICHLOROBENZENE	120-82-1	20.0	ND	148	ND
HEXACHLOROBUTADIENE	87-68-3	20.0	ND	213	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: ___ [signature] ___
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937VS108
LAB NO:	53383
SAMPLE TYPE:	AIR
DATE SAMPLED:	12/1/05
TIME SAMPLED:	8:50
BATCH ID:	121805A01
DATE ANALYZED:	12/19/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	3.65	5.46	19.9
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	ND	3.19	ND
TRICHLOROETHENE	79-01-6	1.00	3.04	5.37	16.3
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	22.8	6.78	154
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	1.60	4.34	6.95
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	1.94	4.92	9.54
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MK
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS109
LAB NO: 53384
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 9:16
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	2.53	4.88	12.4
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	ND	3.19	ND
TRICHLOROETHENE	79-01-6	1.00	2.24	5.37	12.0
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	22.7	6.78	154
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	1.28	4.34	5.56
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: ________
DATE: 12/27/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS101
LAB NO: 53375
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:13
BATCH ID: 121805A01
DATE ANALYZED: 12/18/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	ESTIMATED SAMPLE CONC	MRL	ESTIMATED SAMPLE CONC
ACETONE	67-64-1	10.0	15.6	23.7	37.0
DECANE	124-18-5	10.0	14.3	58.1	83.1
DECANE, 4-METHYL-	2847-72-5	10.0	11.3	63.8	72.1
UNDECANE	1120-21-4	10.0	15.9	63.8	101
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
µg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: rAK
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS102
LAB NO: 53376
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:10
BATCH ID: 121805A01
DATE ANALYZED: 12/18/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	ESTIMATED SAMPLE CONC	MRL	ESTIMATED SAMPLE CONC
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
µg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: mk
DATE: 12/23/05

K PRIME, INC.

LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS103
LAB NO: 53377
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:57
BATCH ID: 121805A01
DATE ANALYZED: 12/18/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	ESTIMATED SAMPLE CONC	MRL	ESTIMATED SAMPLE CONC
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
µg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: [signature]
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS104
LAB NO: 53378
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:38
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	ESTIMATED SAMPLE CONC	MRL	ESTIMATED SAMPLE CONC
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
µg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: MAK
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS105
LAB NO: 53379
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:32
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) ESTIMATED SAMPLE CONC	µg/cu. m MRL	µg/cu. m ESTIMATED SAMPLE CONC
		100	ND	409	ND
		100	ND	409	ND
		100	ND	409	ND
		100	ND	409	ND
		100	ND	409	ND
		100	ND	409	ND
		100	ND	409	ND
		100	ND	409	ND
		100	ND	409	ND
		100	ND	409	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
µg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: MR
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS106
LAB NO: 53380
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:25
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) ESTIMATED SAMPLE CONC	μg/cu. m MRL	μg/cu. m ESTIMATED SAMPLE CONC
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND
		20.0	ND	81.8	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
μg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
μg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: nMr
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS107
LAB NO: 53381
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:19
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) ESTIMATED SAMPLE CONC	µg/cu. m MRL	µg/cu. m ESTIMATED SAMPLE CONC
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
µg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: 1.MC
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS107 DUP
LAB NO: 53382
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 8:19
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) ESTIMATED SAMPLE CONC	μg/cu. m MRL	μg/cu. m ESTIMATED SAMPLE CONC
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND
		200	ND	818	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
μg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
μg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: NMC
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937VS108
LAB NO:	53383
SAMPLE TYPE:	AIR
DATE SAMPLED:	12/1/05
TIME SAMPLED:	8:50
BATCH ID:	121805A01
DATE ANALYZED:	12/19/05

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) ESTIMATED SAMPLE CONC	µg/cu. m MRL	µg/cu. m ESTIMATED SAMPLE CONC
ACETONE	67-64-1	10.0	12.8	23.7	30.4
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
µg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: MC
DATE: 12/23/05

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: TENTATIVELY IDENTIFIED VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS109
LAB NO: 53384
SAMPLE TYPE: AIR
DATE SAMPLED: 12/1/05
TIME SAMPLED: 9:16
BATCH ID: 121805A01
DATE ANALYZED: 12/19/05

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	ESTIMATED SAMPLE CONC	MRL	ESTIMATED SAMPLE CONC
ACETONE	67-64-1	10.0	114	23.7	270
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND
		10.0	ND	40.9	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).
µg/cu.m MRLs FOR COMPOUNDS NOT FOUND ARE BASED ON A MOLECULAR WEIGHT OF 100

APPROVED BY: MC
DATE: 12/23/05

K PRIME, INC.

LABORATORY QUALITY CONTROL REPORT

LAB CONTROL ID: L12180501

LAB CONTROL DUPLICATE ID: D12180501

SAMPLE TYPE: AIR

BATCH ID: 121805A01

DATE ANALYZED: 12/19/05

METHOD: VOC'S IN AIR

REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

COMPOUND NAME	SPIKE ADDED (PPB)	REPORTING LIMIT (PPB)	SAMPLE CONC (PPB)	SPIKE CONC (PPB)	SPIKE REC (%)	REC LIMITS (%)
1,1-DICHLOROETHENE	4.00	0.500	ND	3.07	76.8	60 - 140
TRICHLOROETHENE	4.00	0.500	ND	4.10	103	60 - 140
BENZENE	4.00	0.500	ND	3.95	98.8	60 - 140
TOLUENE	4.00	0.500	ND	3.87	96.8	60 - 140
CHLOROBENZENE	4.00	0.500	ND	4.39	110	60 - 140

COMPOUND NAME	SPIKE ADDED (PPB)	SPIKE DUP CONC (PPB)	SPIKE DUP REC (%)	RPD (%)	QC LIMITS RPD (%)	QC LIMITS REC (%)
1,1-DICHLOROETHENE	4.00	3.24	81.0	5.39	20	60 - 140
TRICHLOROETHENE	4.00	4.21	105	2.65	20	60 - 140
BENZENE	4.00	4.04	101	2.25	20	60 - 140
TOLUENE	4.00	4.27	107	9.83	20	60 - 140
CHLOROBENZENE	4.00	4.73	118	7.46	20	60 - 140

NOTES:

NA - NOT APPLICABLE OR AVAILABLE

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT

VALUES OUTSIDE QC ACCEPTANCE LIMITS ARE FLAGGED IN BOLD

K PRIME, INC.

LABORATORY METHOD BLANK REPORT

METHOD BLANK ID: B12180501
SAMPLE TYPE: AIR

BATCH ID: 121805A01
DATE ANALYZED: 12/18/05

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO15 (GC-MS-SCAN)

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	0.500	ND	2.47	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	0.500	ND	3.50	ND
CHLOROMETHANE	74-87-3	0.500	ND	1.03	ND
VINYL CHLORIDE	75-01-4	0.500	ND	1.28	ND
BROMOMETHANE	74-83-9	0.500	ND	1.94	ND
CHLOROETHANE	75-00-3	0.500	ND	1.32	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.500	ND	2.81	ND
1,1-DICHLOROETHENE	75-35-4	0.500	ND	1.98	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.500	ND	3.83	ND
METHYLENE CHLORIDE	75-09-2	0.500	ND	1.74	ND
1,1-DICHLOROETHANE	75-34-3	0.500	ND	2.02	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.500	ND	1.98	ND
CHLOROFORM	67-66-3	0.500	ND	2.44	ND
1,1,1-TRICHLOROETHANE	71-55-6	0.500	ND	2.73	ND
CARBON TETRACHLORIDE	56-23-5	0.500	ND	3.15	ND
1,2-DICHLOROETHANE	107-06-2	0.500	ND	2.02	ND
BENZENE	71-43-2	0.500	ND	1.60	ND
TRICHLOROETHENE	79-01-6	0.500	ND	2.69	ND
1,2-DICHLOROPROPANE	78-87-5	0.500	ND	2.31	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.500	ND	2.27	ND
TOLUENE	108-88-3	0.500	ND	1.88	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.500	ND	2.27	ND
1,1,2-TRICHLOROETHANE	79-00-5	0.500	ND	2.73	ND
TETRACHLOROETHENE	127-18-4	0.500	ND	3.39	ND
1,2-DIBROMOETHANE	106-93-4	0.500	ND	3.84	ND
CHLOROBENZENE	108-90-7	0.500	ND	2.30	ND
ETHYLBENZENE	100-41-4	0.500	ND	2.17	ND
XYLENE (M+P)	1330-20-7	0.500	ND	2.17	ND
XYLENE (O)	95-47-6	0.500	ND	2.17	ND
STYRENE	100-42-5	0.500	ND	2.13	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.500	ND	3.43	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.500	ND	2.46	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.500	ND	2.46	ND
1,3-DICHLOROBENZENE	541-73-1	0.500	ND	3.01	ND
1,4-DICHLOROBENZENE	106-46-7	0.500	ND	3.01	ND
1,2-DICHLOROBENZENE	95-50-1	0.500	ND	3.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.500	ND	3.71	ND
HEXACHLOROBUTADIENE	87-68-3	0.500	ND	5.33	ND

NOTES:

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µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

Erler & Kalinowski, Inc.

CHAIN OF CUSTODY RECORD

CONSULTING ENGINEERS AND SCIENTISTS
1870 Ogden Drive, Burlingame CA 94010
PHONE: 650-292-9100
FAX: 650-552-9012

Project Name: Presidio
Location: Bldg. 937
Project No.: A00003.08
Sampled By: R. Lion + A. Abeles
EKI COC No.: VS-1
Revision: ____ (A, B, C, D, etc.)

Reporting (circle all that apply)
Hard Copy Format: PDF FAX
Electronic Format: EDF
Provide Chromatograms: NO
EPA Data Report Level: III/IV (See Notes)
Report results to (email or fax no.):
(1) mkking@ekiconsult.com
(2) aabeles@ekiconsult.com

Laboratory: (Address/Phone No./Contact Person)
K Prime
3621 Westwind Drive
Santa Rosa, CA 95403
(707) 527 7574
Contact: Dr. Richard Kagel

ANALYSES REQUESTED
Method No.: EPA TO-15
Analyte Group: VOCs w/ TICs

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	VOCs w/ TICs (EPA TO-15)								EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937VS101	53375	12-1-05	08:13	Gas	1 6-L Summa	X										STD	A808 - See Below
937VS102	53376	↓	08:10	↓	↓	X										↓	A502
937VS103	53377	↓	8:57	↓	↓	X										↓	A427
937VS104	53378	↓	08:38	↓	↓	X										↓	A801
937VS105	53379	↓	08:32	↓	↓	X										↓	A420
937VS106	53380	↓	08:25	↓	↓	X										↓	A102
937VS107	53381	↓	08:19	↓	↓	X										↓	A703
937VS107 DUP	53382	↓	08:19	↓	↓	X										↓	A301
937VS108	53383	↓	08:50	↓	↓	X										↓	A430
937VS109	53384	↓	09:16	↓	↓	X										↓	A202

Special Instructions/Notes:
Sample 937VS101 should be Level IV Reporting. All others Level III.

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
[signature] EKI	12/01/05		12:25 [signature] (VTC) 12:25
[signature] (VTC)	12/01/05	14:51	[signature]

FILE COPY

LABORATORY DATA VALIDATION PACKAGE

EKI PROJECT: A000003.08

PRESIDIO, BLDG 937

PREPARED BY: K PRIME, INC.

APPROVED BY: Carla 2 Kagel

DATE: 5/16/06

FILE COPY

K PRIME, INC.
CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

INDEX

K PRIME PROJECT NUMBER: 911553375

FILE COPY

dewitt, john

From: Richard Kagel [richardkagel@sbcglobal.net]
Sent: Wednesday, January 11, 2006 10:52 AM
To: dewitt, john
Subject: Your Project A000003.08, Tentatively Identified Compounds

Dear Mr. Dewitt,

This transmittal is to document our discussion today (1/11/06) regarding Tentatively Identified Compounds (TICs). As we discussed, there are several silicone-related compounds that were detected in the sub-slab vapor samples submitted to K Prime, Inc. on 12/01/05 from your Presidio project. These compounds are likely due to the high vacuum silicone grease used to seal the probes and other potential silicone-based products used in the sampling and analysis systems. For these reasons, we typically do not include silicone-based compounds in our TIC reports. Based on your agreement, we plan to exclude these silicone "artifact" compounds from our TIC reports. This will be noted in the narrative for this delivery group and a copy of this transmittal will be included as well.

Best Regards,

Richard Kagel

Richard A. Kagel, Ph.D.
Laboratory Director
K Prime, Inc.
3621 Westwind Blvd.
Santa Rosa, CA 95403
707.527.7574 (Phone)
707.527.7879 (Fax)
richardkagel@sbcglobal.net

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 03/06/06

TO: MS. MICHELLE KING
ERLER & KALINOWSKI, INC.
1870 OGDEN DRIVE
BURLINGAME, CA 94010

Phone: 650-292-9100
Fax: 650-552-9012
Email: mmking@ekiconsult.com

ACCT: 9115
PROJ: A000003.08

FROM: Richard A. Kagel, Ph.D. MK 3/6/06
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT A000003.08

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	KPI LAB #
937IA 101	AIR	01/31/06	53912
937IA 102	AIR	01/31/06	53913
937IA 103	AIR	01/31/06	53914
937IA 103 DUP	AIR	01/31/06	53915
937IA 104	AIR	01/31/06	53916
937IA 105	AIR	01/31/06	53917
937IA 106	AIR	01/31/06	53918
A-807	AIR	01/31/06	53919 NO ANALYSIS

The above listed sample group was received on 02/01/06 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937IA 101
LAB NO:	53912
SAMPLE TYPE:	AIR
DATE SAMPLED:	1/31/06
TIME SAMPLED:	8:38
BATCH ID:	021406A01
DATE ANALYZED:	2/14/06

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
CHLOROFORM	67-66-3	0.200	ND	0.980	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
BENZENE	71-43-2	0.200	0.395	0.640	1.26
TRICHLOROETHENE	79-01-6	0.400	ND	2.15	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
TETRACHLOROETHENE	127-18-4	0.100	ND	0.680	ND
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: AM
DATE: 3/6/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937IA 102
LAB NO:	53913
SAMPLE TYPE:	AIR
DATE SAMPLED:	1/31/06
TIME SAMPLED:	8:39
BATCH ID:	021406A01
DATE ANALYZED:	2/14/06

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
CHLOROFORM	67-66-3	0.200	ND	0.980	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
BENZENE	71-43-2	0.200	0.757	0.640	2.42
TRICHLOROETHENE	79-01-6	0.400	ND	2.15	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
TETRACHLOROETHENE	127-18-4	0.100	0.149	0.680	1.01
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [signature]
DATE: 3/6/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937IA 103
LAB NO: 53914
SAMPLE TYPE: AIR
DATE SAMPLED: 1/31/06
TIME SAMPLED: 8:40
BATCH ID: 021406A01
DATE ANALYZED: 2/14/06

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
CHLOROFORM	67-66-3	0.200	ND	0.980	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
BENZENE	71-43-2	0.200	0.442	0.640	1.41
TRICHLOROETHENE	79-01-6	0.400	ND	2.15	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
TETRACHLOROETHENE	127-18-4	0.100	0.101	0.680	0.690
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [signature]
DATE: 3/6/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937IA 103 DUP
LAB NO: 53915
SAMPLE TYPE: AIR
DATE SAMPLED: 1/31/06
TIME SAMPLED: 8:40
BATCH ID: 021406A01
DATE ANALYZED: 2/14/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
CHLOROFORM	67-66-3	0.200	ND	0.980	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
BENZENE	71-43-2	0.200	0.430	0.640	1.37
TRICHLOROETHENE	79-01-6	0.400	ND	2.15	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
TETRACHLOROETHENE	127-18-4	0.100	0.156	0.680	1.06
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: NMC
DATE: 3/6/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937IA 104
LAB NO:	53916
SAMPLE TYPE:	AIR
DATE SAMPLED:	1/31/06
TIME SAMPLED:	10:17
BATCH ID:	021406A01
DATE ANALYZED:	2/14/06

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
CHLOROFORM	67-66-3	0.200	ND	0.980	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
BENZENE	71-43-2	0.200	0.393	0.640	1.26
TRICHLOROETHENE	79-01-6	0.400	ND	2.15	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
TETRACHLOROETHENE	127-18-4	0.100	ND	0.680	ND
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MMC
DATE: 3/6/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937IA 105
LAB NO: 53917
SAMPLE TYPE: AIR
DATE SAMPLED: 1/31/06
TIME SAMPLED: 7:33
BATCH ID: 021406A01
DATE ANALYZED: 2/14/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
CHLOROFORM	67-66-3	0.200	ND	0.980	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
BENZENE	71-43-2	0.200	0.435	0.640	1.39
TRICHLOROETHENE	79-01-6	0.400	ND	2.15	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
TETRACHLOROETHENE	127-18-4	0.100	0.116	0.680	0.790
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
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APPROVED BY: RMC
DATE: 3/6/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937IA 106
LAB NO: 53918
SAMPLE TYPE: AIR
DATE SAMPLED: 1/31/06
TIME SAMPLED: 7:19
BATCH ID: 021406A01
DATE ANALYZED: 2/14/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
CHLOROFORM	67-66-3	0.200	ND	0.980	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
BENZENE	71-43-2	0.200	0.413	0.640	1.32
TRICHLOROETHENE	79-01-6	0.400	ND	2.15	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
TETRACHLOROETHENE	127-18-4	0.100	ND	0.680	ND
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [signature]
DATE: 3/6/06

K PRIME, INC.
LABORATORY REPORT

METHOD BLANK ID: B02140601
SAMPLE TYPE: AIR

BATCH ID: 021406A01
DATE ANALYZED: 2/14/06

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	μg/cu. m MRL	μg/cu. m SAMPLE CONC
CHLOROFORM	67-66-3	0.200	ND	0.980	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
BENZENE	71-43-2	0.200	ND	0.640	ND
TRICHLOROETHENE	79-01-6	0.400	ND	2.15	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
TETRACHLOROETHENE	127-18-4	0.100	ND	0.680	ND
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
μg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

LAB CONTROL ID: L02140601
LAB CONTROL DUPLICATE ID: D02140601

SAMPLE TYPE: AIR
BATCH ID: 021406A01
DATE ANALYZED: 2/14/06

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

COMPOUND NAME	SPIKE % REC	DUP % REC	RPD	QC LIMITS RPD	QC LIMITS % REC
1,1,1-TRICHLOROETHANE	100	102	2.37	25	60 - 140
BENZENE	92.4	98.8	6.69	25	60 - 140
TRICHLOROETHENE	105	110	4.66	25	60 - 140
TOLUENE	89.6	115	25.0	25	60 - 140
TETRACHLOROETHENE	101	119	16.0	25	60 - 140

NOTES:
NA - NOT APPLICABLE OR AVAILABLE

PAGE 1 OF 1

Erler & Kalinowski, Inc.
CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

EKI COC No.:
Revision: 2 (A, B, C, D, etc.)

Project Name: Presidio
Location: Bldg. 937
Reporting: (circle all that apply)
Hard Copy Format: PDF FAX
Electronic Format: EDF
Provide Chromatograms: NO
EPA Data Report Level: III/IV
Report results to (email or fax no.):
(1) mkking@ekiconsult.com

Project No.: A000003.08
Sampled By: Roger Lion
Laboratory: (Address/Phone No./Contact Person)
K Prime
3621 Westwind Drive
Santa Rosa, CA 95403
(707) 527 7574
Contact: Dr. Richard Kagel

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	Method No. EPA TO-15 / Analyte Group SELECTED VOCs (See Notes)		REPORTING LEVEL IV (All other samples Level III)	EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937 IA 101	53912	01/31/06	08:38	Air	(1) 6 L-SUMMA	X					STD	A-635 — 00802
937 IA 102	53913	↓	08:39	Air	(1) 6 L-SUMMA	X		X			STD	A-805 — 00397
937 IA 103	53914	↓	08:40	Air	(1) 6 L-SUMMA	X					STD	A 705 — 00394
937 IA 103 DUP	53915	↓	08:40	Air	(1) 6 L-SUMMA	X					STD	A414 — 00393
937 IA 104	53916	↓	10:17	Air	(1) 6 L-SUMMA	X					STD	A-507 — 00401
937 IA 105	53917	↓	07:33	Air	(1) 6 L-SUMMA	X					STD	A-636 — 00398
937 IA 106	53918	↓	07:19	Air	(1) 6 L-SUMMA	X	~~(NO ANALYSIS!)~~ AGA				STD	A-601 — 00399
A-807	53919			Air	(1) 6 L-SUMMA	—	(NO ANALYSIS!)				STD	A-807 — 01127

Special Instructions/Notes: Samples should be analyzed for the following VOCs only: Benzene, Chloroform, Tetracholorethene, Toluene, 1,1,1-Trichloroethane, Trichloroethene, 1,2,4-Trimethylbenzene, Xylenes (m,p-) and Xylenes (o-). SIM should be used as necessary after consultation with Michelle King of EKI.

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Roger Lion EKI	02/01/06	10:33	[signature] EKI
[signature] EKI	2/1/06	10:55	[signature] 2/1/06 1655
Relinquished by:	Date	Time	Received by:

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 07/24/06

TO: MS. NINA POZDNYAKOVA, MS. MICHELLE KING
MR. ADAM ABELES, MR. JOHN DEWITT
ERLER & KALINOWSKI, INC.
1870 OGDEN DRIVE
BURLINGAME, CA 94010

ACCT: 9115
PROJ: A000003.08

Phone: 650-292-9100
Fax: 650-552-9012
Email: npozdnyakova@ekiconsult.com
mkking@ekiconsult.com
aabeles@ekiconsult.com
jdewitt@ekiconsult.com

FROM: Richard A. Kagel, Ph.D. AMC 7/24/06
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT A000003.08

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	KPI LAB #
937SB114 DUP	AIR	06/14/06	56030
937SB112 DUP	AIR	06/14/06	56031

The above listed sample group was received on 06/14/06 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937SB114 DUP
LAB NO: 56030
SAMPLE TYPE: AIR
DATE SAMPLED: 6/14/06
TIME SAMPLED: 13:36
BATCH ID: 071406A01
DATE ANALYZED: 7/14/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	11.8	5.46	64.4
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	ND	3.19	ND
TRICHLOROETHENE	79-01-6	1.00	1.06	5.37	5.70
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	7.32	3.77	27.6
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	72.9	6.78	494
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	1.95	4.34	8.47
XYLENE (M+P)	1330-20-7	1.00	9.59	4.34	41.6
XYLENE (O)	95-47-6	1.00	3.16	4.34	13.7
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	1.26	4.92	6.19
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	4.51	4.92	22.2
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
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APPROVED BY: MMC
DATE: 7/24/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937SB112 DUP
LAB NO:	56031
SAMPLE TYPE:	AIR
DATE SAMPLED:	6/14/06
TIME SAMPLED:	10:42
BATCH ID:	071406A01
DATE ANALYZED:	7/14/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	5.00	ND	24.7	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	5.00	ND	35.0	ND
CHLOROMETHANE	74-87-3	5.00	ND	10.3	ND
VINYL CHLORIDE	75-01-4	5.00	ND	12.8	ND
BROMOMETHANE	74-83-9	5.00	ND	19.4	ND
CHLOROETHANE	75-00-3	5.00	ND	13.2	ND
TRICHLOROFLUOROMETHANE	75-69-4	5.00	ND	28.1	ND
1,1-DICHLOROETHENE	75-35-4	5.00	ND	19.8	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	5.00	ND	38.3	ND
METHYLENE CHLORIDE	75-09-2	5.00	ND	17.4	ND
1,1-DICHLOROETHANE	75-34-3	5.00	ND	20.2	ND
CIS-1,2-DICHLOROETHENE	156-59-2	5.00	ND	19.8	ND
CHLOROFORM	67-66-3	5.00	ND	24.4	ND
1,1,1-TRICHLOROETHANE	71-55-6	5.00	ND	27.3	ND
CARBON TETRACHLORIDE	56-23-5	5.00	ND	31.5	ND
1,2-DICHLOROETHANE	107-06-2	5.00	ND	20.2	ND
BENZENE	71-43-2	5.00	ND	16.0	ND
TRICHLOROETHENE	79-01-6	5.00	ND	26.9	ND
1,2-DICHLOROPROPANE	78-87-5	5.00	ND	23.1	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	5.00	ND	22.7	ND
TOLUENE	108-88-3	5.00	10.4	18.8	39.2
CIS-1,3-DICHLOROPROPENE	10061-01-5	5.00	ND	22.7	ND
1,1,2-TRICHLOROETHANE	79-00-5	5.00	ND	27.3	ND
TETRACHLOROETHENE	127-18-4	5.00	420	33.9	2850
1,2-DIBROMOETHANE	106-93-4	5.00	ND	38.4	ND
CHLOROBENZENE	108-90-7	5.00	ND	23.0	ND
ETHYLBENZENE	100-41-4	5.00	ND	21.7	ND
XYLENE (M+P)	1330-20-7	5.00	6.31	21.7	27.4
XYLENE (O)	95-47-6	5.00	ND	21.7	ND
STYRENE	100-42-5	5.00	ND	21.3	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.00	ND	34.3	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	5.00	ND	24.6	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00	ND	24.6	ND
1,3-DICHLOROBENZENE	541-73-1	5.00	ND	30.1	ND
1,4-DICHLOROBENZENE	106-46-7	5.00	ND	30.1	ND
1,2-DICHLOROBENZENE	95-50-1	5.00	ND	30.1	ND
1,2,4-TRICHLOROBENZENE	120-82-1	5.00	ND	37.1	ND
HEXACHLOROBUTADIENE	87-68-3	5.00	ND	53.3	ND

NOTES:
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µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [illegible]
DATE: 7/24/06

K PRIME, INC.

LABORATORY METHOD BLANK REPORT

METHOD BLANK ID: B07140601
SAMPLE TYPE: AIR

BATCH ID: 071406A01
DATE ANALYZED: 7/14/06

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.50	ND	2.47	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	0.50	ND	3.50	ND
CHLOROMETHANE	74-87-3	0.50	ND	1.03	ND
VINYL CHLORIDE	75-01-4	0.50	ND	1.28	ND
BROMOMETHANE	74-83-9	0.50	ND	1.94	ND
CHLOROETHANE	75-00-3	0.50	ND	1.32	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.50	ND	2.81	ND
1,1-DICHLOROETHENE	75-35-4	0.50	ND	1.98	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.50	ND	3.83	ND
METHYLENE CHLORIDE	75-09-2	0.50	ND	1.74	ND
1,1-DICHLOROETHANE	75-34-3	0.50	ND	2.02	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.50	ND	1.98	ND
CHLOROFORM	67-66-3	0.50	ND	2.44	ND
1,1,1-TRICHLOROETHANE	71-55-6	0.50	ND	2.73	ND
CARBON TETRACHLORIDE	56-23-5	0.50	ND	3.15	ND
1,2-DICHLOROETHANE	107-06-2	0.50	ND	2.02	ND
BENZENE	71-43-2	0.50	ND	1.60	ND
TRICHLOROETHENE	79-01-6	0.50	ND	2.69	ND
1,2-DICHLOROPROPANE	78-87-5	0.50	ND	2.31	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.50	ND	2.27	ND
TOLUENE	108-88-3	0.50	ND	1.88	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.50	ND	2.27	ND
1,1,2-TRICHLOROETHANE	79-00-5	0.50	ND	2.73	ND
TETRACHLOROETHENE	127-18-4	0.50	ND	3.39	ND
1,2-DIBROMOETHANE	106-93-4	0.50	ND	3.84	ND
CHLOROBENZENE	108-90-7	0.50	ND	2.30	ND
ETHYLBENZENE	100-41-4	0.50	ND	2.17	ND
XYLENE (M+P)	1330-20-7	0.50	ND	2.17	ND
XYLENE (O)	95-47-6	0.50	ND	2.17	ND
STYRENE	100-42-5	0.50	ND	2.13	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.50	ND	3.43	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.50	ND	2.46	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.50	ND	2.46	ND
1,3-DICHLOROBENZENE	541-73-1	0.50	ND	3.01	ND
1,4-DICHLOROBENZENE	106-46-7	0.50	ND	3.01	ND
1,2-DICHLOROBENZENE	95-50-1	0.50	ND	3.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.50	ND	3.71	ND
HEXACHLOROBUTADIENE	87-68-3	0.50	ND	5.33	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

LAB CONTROL ID: L071406A01
LAB CONTROL DUPLICATE ID: D071406A01

SAMPLE TYPE: AIR
BATCH ID: 071406A01
DATE ANALYZED: 7/14/06

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

COMPOUND NAME	SPIKE ADDED (PPB)	REPORTING LIMIT (PPB)	SAMPLE CONC (PPB)	SPIKE CONC (PPB)	SPIKE REC (%)	REC LIMITS (%)
1,1-DICHLOROETHENE	10.0	0.50	ND	8.49	84.9	60 - 140
TRICHLOROETHENE	10.0	0.50	ND	9.65	96.5	60 - 140
BENZENE	10.0	0.50	ND	8.17	81.7	60 - 140
TOLUENE	10.0	0.50	ND	9.47	94.7	60 - 140
TETRACHLOROETHENE	10.0	0.50	ND	10.2	102	60 - 140

COMPOUND NAME	SPIKE ADDED (PPB)	SPIKE DUP CONC (PPB)	SPIKE DUP REC (%)	RPD (%)	QC LIMITS RPD (%)	QC LIMITS REC (%)
1,1-DICHLOROETHENE	10.0	8.26	82.6	2.75	25	60 - 140
TRICHLOROETHENE	10.0	8.73	87.3	10.0	25	60 - 140
BENZENE	10.0	7.88	78.8	3.61	25	60 - 140
TOLUENE	10.0	8.82	88.2	7.11	25	60 - 140
TETRACHLOROETHENE	10.0	9.12	91.2	11.6	25	60 - 140

NOTES:
NA - NOT APPLICABLE OR AVAILABLE
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT

Erler & Kalinowski, Inc. CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: Presidio
Project No.: A000003.08
Location: 937 Marine Drive/Bldg. 937
Sampled By: A.G. Abeles
EKI COC No.: Gas 3
Revision: ____ (A, B, C, D, etc.)

Reporting: (circle all that apply)
Hard Copy Format: PDF FAX
Electronic Format: EDD EDF (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III/IV
Report results to (email or fax no.):
(1) npozdnyakova@ekiconsult.com (2) aabeles@ekiconsult.com
(3) mkking@ekiconsult.com (4) jdewitt@ekiconsult.com

Laboratory: (Address/Phone No./Contact Person)
K-Prime
3621 Westwind Blvd.
Santa Rosa, CA 95403
(707) 527-7574
Contact: Rich or Karla Kagel

ANALYSES REQUESTED — Method No.: TO-15; Analyte Group: VOCs

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	TO-15 VOCs								EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937SB114DUP	56030	6-14-06	12:36	Gas	1 6-L Summa	X										STD	A-414
937SB112DUP	56031	6-14-06	10:42	Gas	"	X										STD	A-432

Special Instructions/Notes:
Before using SIM, please contact A. Abeles or M. King. DFA used as leak check.

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
ADAM ABELES [signature] EKI	6-14-2006	14:36	[signature] (VTC) 6/14 06 2:36
[signature] (VTC)	6/14/06	1625	[signature]

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 07/24/06

TO: MS. MICHELLE KRIEGMAN-KING
ERLER & KALINOWSKI, INC.
1870 OGDEN DRIVE
BURLINGAME, CA 94010

Phone: 650-292-9100
Fax: 650-552-9012
Email: mkking@ekiconsult.com

ACCT: 9115
PROJ: A0003.08

FROM: Richard A. Kagel, Ph.D. RAK 7/24/06
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT A0003.08

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	KPI LAB #
933VS101	AIR	06/21/06	56125
933VS101DUP	AIR	06/21/06	56126
933VS102	AIR	06/21/06	56127

The above listed sample group was received on 06/22/06 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A0003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	933VS101
LAB NO:	56125
SAMPLE TYPE:	AIR
DATE SAMPLED:	6/21/06
TIME SAMPLED:	14:54
BATCH ID:	071406A01
DATE ANALYZED:	7/17/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	1.27	2.07	2.62
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	1.10	4.05	4.45
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	ND	3.19	ND
TRICHLOROETHENE	79-01-6	1.00	ND	5.37	ND
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	5.99	6.78	40.6
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: NMK
DATE: 7/24/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A0003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 933VS101DUP
LAB NO: 56126
SAMPLE TYPE: AIR
DATE SAMPLED: 6/21/06
TIME SAMPLED: 14:54
BATCH ID: 071406A01
DATE ANALYZED: 7/17/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	ND	3.19	ND
TRICHLOROETHENE	79-01-6	1.00	ND	5.37	ND
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	ND	3.77	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	ND	6.78	ND
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	ND	4.34	ND
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: rMl
DATE: 7/24/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A0003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 933VS102
LAB NO: 56127
SAMPLE TYPE: AIR
DATE SAMPLED: 6/21/06
TIME SAMPLED: 15:06
BATCH ID: 071406A01
DATE ANALYZED: 7/17/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	2.07	3.47	7.19
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	1.00	ND	3.19	ND
TRICHLOROETHENE	79-01-6	1.00	ND	5.37	ND
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	4.02	3.77	15.1
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	1.00	1.03	6.78	6.99
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	1.55	4.34	6.73
XYLENE (O)	95-47-6	1.00	ND	4.34	ND
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	ND	4.92	ND
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [signature]
DATE: 7/24/06

K PRIME, INC.

LABORATORY METHOD BLANK REPORT

METHOD BLANK ID: B07140601
SAMPLE TYPE: AIR

BATCH ID: 071406A01
DATE ANALYZED: 7/14/06

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	0.50	ND	2.47	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	0.50	ND	3.50	ND
CHLOROMETHANE	74-87-3	0.50	ND	1.03	ND
VINYL CHLORIDE	75-01-4	0.50	ND	1.28	ND
BROMOMETHANE	74-83-9	0.50	ND	1.94	ND
CHLOROETHANE	75-00-3	0.50	ND	1.32	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.50	ND	2.81	ND
1,1-DICHLOROETHENE	75-35-4	0.50	ND	1.98	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.50	ND	3.83	ND
METHYLENE CHLORIDE	75-09-2	0.50	ND	1.74	ND
1,1-DICHLOROETHANE	75-34-3	0.50	ND	2.02	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.50	ND	1.98	ND
CHLOROFORM	67-66-3	0.50	ND	2.44	ND
1,1,1-TRICHLOROETHANE	71-55-6	0.50	ND	2.73	ND
CARBON TETRACHLORIDE	56-23-5	0.50	ND	3.15	ND
1,2-DICHLOROETHANE	107-06-2	0.50	ND	2.02	ND
BENZENE	71-43-2	0.50	ND	1.60	ND
TRICHLOROETHENE	79-01-6	0.50	ND	2.69	ND
1,2-DICHLOROPROPANE	78-87-5	0.50	ND	2.31	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.50	ND	2.27	ND
TOLUENE	108-88-3	0.50	ND	1.88	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.50	ND	2.27	ND
1,1,2-TRICHLOROETHANE	79-00-5	0.50	ND	2.73	ND
TETRACHLOROETHENE	127-18-4	0.50	ND	3.39	ND
1,2-DIBROMOETHANE	106-93-4	0.50	ND	3.84	ND
CHLOROBENZENE	108-90-7	0.50	ND	2.30	ND
ETHYLBENZENE	100-41-4	0.50	ND	2.17	ND
XYLENE (M+P)	1330-20-7	0.50	ND	2.17	ND
XYLENE (O)	95-47-6	0.50	ND	2.17	ND
STYRENE	100-42-5	0.50	ND	2.13	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.50	ND	3.43	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.50	ND	2.46	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.50	ND	2.46	ND
1,3-DICHLOROBENZENE	541-73-1	0.50	ND	3.01	ND
1,4-DICHLOROBENZENE	106-46-7	0.50	ND	3.01	ND
1,2-DICHLOROBENZENE	95-50-1	0.50	ND	3.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.50	ND	3.71	ND
HEXACHLOROBUTADIENE	87-68-3	0.50	ND	5.33	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

LAB CONTROL ID: L071406A01
LAB CONTROL DUPLICATE ID: D071406A01

SAMPLE TYPE: AIR
BATCH ID: 071406A01
DATE ANALYZED: 7/14/06

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

COMPOUND NAME	SPIKE ADDED (PPB)	REPORTING LIMIT (PPB)	SAMPLE CONC (PPB)	SPIKE CONC (PPB)	SPIKE REC (%)	REC LIMITS (%)
1,1-DICHLOROETHENE	10.0	0.50	ND	8.49	84.9	60 - 140
TRICHLOROETHENE	10.0	0.50	ND	9.65	96.5	60 - 140
BENZENE	10.0	0.50	ND	8.17	81.7	60 - 140
TOLUENE	10.0	0.50	ND	9.47	94.7	60 - 140
TETRACHLOROETHENE	10.0	0.50	ND	10.2	102	60 - 140

COMPOUND NAME	SPIKE ADDED (PPB)	SPIKE DUP CONC (PPB)	SPIKE DUP REC (%)	RPD (%)	QC LIMITS RPD (%)	QC LIMITS REC (%)
1,1-DICHLOROETHENE	10.0	8.26	82.6	2.75	25	60 - 140
TRICHLOROETHENE	10.0	8.73	87.3	10.0	25	60 - 140
BENZENE	10.0	7.88	78.8	3.61	25	60 - 140
TOLUENE	10.0	8.82	88.2	7.11	25	60 - 140
TETRACHLOROETHENE	10.0	9.12	91.2	11.6	25	60 - 140

NOTES:
NA - NOT APPLICABLE OR AVAILABLE
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT

Erler & Kalinowski, Inc.
CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

PAGE 1 OF 1

Project Name: Presidio
Project No.: AC00C03.08
Location: Bldg. 937
Sampled By: Adam Abeles
Reporting (circle all that apply)
Hard Copy Format: PDF FAX
Electronic Format: EDF
Provide Chromatograms: NO
EPA Data Report Level: III/IV
Report results to (email or fax no.):
(1) mKing@ekiconsult.com

Laboratory: (Address/Phone No./Contact Person)
K Prime
3521 Westwind Drive
Santa Rosa, CA 95403
(707) 527 7574 Contact: Dr. Richard Kagel

EKI COC No.: 8
Gas 4
Revision: A (A, B, C, D, etc.)
JTD 7/20/06

ANALYSES REQUESTED
Method No.: EPA TO-15
Analyte Group: ~~SELECTED VOCs (See Notes)~~ VOCs (Full scan) w/ TICs

Rename

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	EPA TO-15 VOCs							REPORTING LEVEL IV (All other samples Level III)	EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
933SB101	56125	6-21-06	14:54	Air	(1) 6 L-SUMMA	X										STD	~~Rem~~ 933VS101
933SB101DUP	56126	6-21-06	14:54	Air	(1) 6 L-SUMMA	X										STD	933VS101 Dup
933SB103	56127	6-21-06	15:06	Air	(1) 6 L-SUMMA	X										STD	933VS102
																STD	
																STD	
																STD	
																STD	
																STD	
		Delete NOTE															

Special Instructions/Notes: ~~Samples should be analyzed for the following VOCs only: Benzene, Chloroform, Tetrachloroethene, Toluene, 1,1,1-Trichloroethane, Trichloroethene, 1,2,4-Trimethylbenzene, Xylenes (m,p-) and Xylenes (o-). SIM should be used as necessary after consultation with Michele King of EKI.~~

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)		
[signature] EKI	6-22-06	13:42	Emol (VTC)	6/22/06	1:42
Emol (VTC)	6/22/06	3:49	[signature]	6/22/06	3:49

K PRIME, Inc.
CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 08/09/06

TO: MS. NINA POZDNYAKOVA
MR. ADAM ABELES
MS. MICHELLE KRIEGMAN-KING
MR. JOHN DEWITT
ERLER & KALINOWSKI, INC.
1870 OGDEN DRIVE
BURLINGAME, CA 94010

ACCT: 9115
PROJ: A000003.08

Phone: 650-292-9100
Fax: 650-552-9012
Email: npozdnyakova@ekiconsult.com
aabeles@ekiconsult.com
mkking@ekiconsult.com
jdewitt@ekiconsult.com

FROM: Richard A. Kagel, Ph.D. RAK 8/9/06
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT A000003.08

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	KPI LAB #
937VS101	AIR	07/20/06	56716
937VS102	AIR	07/20/06	56717
937VS103	AIR	07/20/06	56718
937VS104	AIR	07/20/06	56719
937VS105	AIR	07/20/06	56720
937VS106	AIR	07/20/06	56721
937VS107	AIR	07/20/06	56722
937VS107DUP	AIR	07/20/06	56723
937VS108	AIR	07/20/06	56724
937VS109	AIR	07/20/06	56725

The above listed sample group was received on 07/21/06 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS101
LAB NO: 56716
SAMPLE TYPE: AIR
DATE SAMPLED: 7/20/06
TIME SAMPLED: 8:30
BATCH ID: 080406A01
DATE ANALYZED: 8/8/06

		PPB (V/V)		μg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	50.0	ND	247	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	50.0	ND	350	ND
CHLOROMETHANE	74-87-3	50.0	ND	103	ND
VINYL CHLORIDE	75-01-4	50.0	ND	128	ND
BROMOMETHANE	74-83-9	50.0	ND	194	ND
CHLOROETHANE	75-00-3	50.0	ND	132	ND
TRICHLOROFLUOROMETHANE	75-69-4	50.0	ND	281	ND
1,1-DICHLOROETHENE	75-35-4	50.0	ND	198	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	50.0	ND	383	ND
METHYLENE CHLORIDE	75-09-2	50.0	ND	174	ND
1,1-DICHLOROETHANE	75-34-3	50.0	ND	202	ND
CIS-1,2-DICHLOROETHENE	156-59-2	50.0	ND	198	ND
CHLOROFORM	67-66-3	20.0	ND	97.7	ND
1,1,1-TRICHLOROETHANE	71-55-6	50.0	ND	273	ND
CARBON TETRACHLORIDE	56-23-5	50.0	ND	315	ND
1,2-DICHLOROETHANE	107-06-2	50.0	ND	202	ND
BENZENE	71-43-2	10.0	ND	31.9	ND
TRICHLOROETHENE	79-01-6	20.0	ND	107	ND
1,2-DICHLOROPROPANE	78-87-5	50.0	ND	231	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	50.0	ND	227	ND
TOLUENE	108-88-3	50.0	ND	188	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	50.0	ND	227	ND
1,1,2-TRICHLOROETHANE	79-00-5	50.0	ND	273	ND
TETRACHLOROETHENE	127-18-4	15.0	16.6	102	113
1,2-DIBROMOETHANE	106-93-4	50.0	ND	384	ND
CHLOROBENZENE	108-90-7	50.0	ND	230	ND
ETHYLBENZENE	100-41-4	50.0	ND	217	ND
XYLENE (M+P)	1330-20-7	50.0	ND	217	ND
XYLENE (O)	95-47-6	50.0	ND	217	ND
STYRENE	100-42-5	50.0	ND	213	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	50.0	ND	343	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	50.0	ND	246	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	50.0	ND	246	ND
1,3-DICHLOROBENZENE	541-73-1	50.0	ND	301	ND
1,4-DICHLOROBENZENE	106-46-7	50.0	ND	301	ND
1,2-DICHLOROBENZENE	95-50-1	50.0	ND	301	ND
1,2,4-TRICHLOROBENZENE	120-82-1	50.0	ND	371	ND
HEXACHLOROBUTADIENE	87-68-3	50.0	ND	533	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
μg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: NML
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS102
LAB NO: 56717
SAMPLE TYPE: AIR
DATE SAMPLED: 7/20/06
TIME SAMPLED: 8:35
BATCH ID: 080406A01
DATE ANALYZED: 8/8/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	CAS NO.	MRL	SAMPLE CONC	MRL	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	2.50	ND	12.4	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	2.50	ND	17.5	ND
CHLOROMETHANE	74-87-3	2.50	ND	5.16	ND
VINYL CHLORIDE	75-01-4	2.50	ND	6.39	ND
BROMOMETHANE	74-83-9	2.50	ND	9.71	ND
CHLOROETHANE	75-00-3	2.50	ND	6.60	ND
TRICHLOROFLUOROMETHANE	75-69-4	2.50	ND	14.0	ND
1,1-DICHLOROETHENE	75-35-4	2.50	ND	9.91	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	2.50	ND	19.2	ND
METHYLENE CHLORIDE	75-09-2	2.50	ND	8.68	ND
1,1-DICHLOROETHANE	75-34-3	2.50	ND	10.1	ND
CIS-1,2-DICHLOROETHENE	156-59-2	2.50	ND	9.91	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	2.50	ND	13.6	ND
CARBON TETRACHLORIDE	56-23-5	2.50	ND	15.7	ND
1,2-DICHLOROETHANE	107-06-2	2.50	ND	10.1	ND
BENZENE	71-43-2	0.50	0.51	1.60	1.63
TRICHLOROETHENE	79-01-6	1.00	ND	5.37	ND
1,2-DICHLOROPROPANE	78-87-5	2.50	ND	11.6	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	2.50	ND	11.3	ND
TOLUENE	108-88-3	2.50	ND	9.42	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	2.50	ND	11.3	ND
1,1,2-TRICHLOROETHANE	79-00-5	2.50	ND	13.6	ND
TETRACHLOROETHENE	127-18-4	0.75	ND	5.09	ND
1,2-DIBROMOETHANE	106-93-4	2.50	ND	19.2	ND
CHLOROBENZENE	108-90-7	2.50	ND	11.5	ND
ETHYLBENZENE	100-41-4	2.50	ND	10.9	ND
XYLENE (M+P)	1330-20-7	2.50	ND	10.9	ND
XYLENE (O)	95-47-6	2.50	ND	10.9	ND
STYRENE	100-42-5	2.50	ND	10.6	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50	ND	17.2	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	2.50	ND	12.3	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	2.50	ND	12.3	ND
1,3-DICHLOROBENZENE	541-73-1	2.50	ND	15.0	ND
1,4-DICHLOROBENZENE	106-46-7	2.50	ND	15.0	ND
1,2-DICHLOROBENZENE	95-50-1	2.50	ND	15.0	ND
1,2,4-TRICHLOROBENZENE	120-82-1	2.50	ND	18.6	ND
HEXACHLOROBUTADIENE	87-68-3	2.50	ND	26.7	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MK
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937VS103
LAB NO:	56718
SAMPLE TYPE:	AIR
DATE SAMPLED:	7/20/06
TIME SAMPLED:	8:38
BATCH ID:	080406A01
DATE ANALYZED:	8/8/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	2.00	ND	9.89	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	2.00	ND	14.0	ND
CHLOROMETHANE	74-87-3	2.00	ND	4.13	ND
VINYL CHLORIDE	75-01-4	2.00	ND	5.11	ND
BROMOMETHANE	74-83-9	2.00	ND	7.77	ND
CHLOROETHANE	75-00-3	2.00	ND	5.28	ND
TRICHLOROFLUOROMETHANE	75-69-4	2.00	ND	11.2	ND
1,1-DICHLOROETHENE	75-35-4	2.00	ND	7.93	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	2.00	ND	15.3	ND
METHYLENE CHLORIDE	75-09-2	2.00	ND	6.95	ND
1,1-DICHLOROETHANE	75-34-3	2.00	ND	8.10	ND
CIS-1,2-DICHLOROETHENE	156-59-2	2.00	ND	7.93	ND
CHLOROFORM	67-66-3	0.80	ND	3.91	ND
1,1,1-TRICHLOROETHANE	71-55-6	2.00	ND	10.9	ND
CARBON TETRACHLORIDE	56-23-5	2.00	ND	12.6	ND
1,2-DICHLOROETHANE	107-06-2	2.00	ND	8.09	ND
BENZENE	71-43-2	0.40	0.84	1.28	2.68
TRICHLOROETHENE	79-01-6	0.80	ND	4.30	ND
1,2-DICHLOROPROPANE	78-87-5	2.00	ND	9.24	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	2.00	ND	9.08	ND
TOLUENE	108-88-3	2.00	ND	7.54	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	2.00	ND	9.08	ND
1,1,2-TRICHLOROETHANE	79-00-5	2.00	ND	10.9	ND
TETRACHLOROETHENE	127-18-4	0.60	9.23	4.07	62.6
1,2-DIBROMOETHANE	106-93-4	2.00	ND	15.4	ND
CHLOROBENZENE	108-90-7	2.00	ND	9.21	ND
ETHYLBENZENE	100-41-4	2.00	ND	8.68	ND
XYLENE (M+P)	1330-20-7	2.00	2.99	8.68	13.0
XYLENE (O)	95-47-6	2.00	ND	8.68	ND
STYRENE	100-42-5	2.00	ND	8.52	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00	ND	13.7	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	2.00	ND	9.83	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	2.00	ND	9.83	ND
1,3-DICHLOROBENZENE	541-73-1	2.00	ND	12.0	ND
1,4-DICHLOROBENZENE	106-46-7	2.00	ND	12.0	ND
1,2-DICHLOROBENZENE	95-50-1	2.00	ND	12.0	ND
1,2,4-TRICHLOROBENZENE	120-82-1	2.00	ND	14.8	ND
HEXACHLOROBUTADIENE	87-68-3	2.00	ND	21.3	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MMC
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937VS104
LAB NO:	56719
SAMPLE TYPE:	AIR
DATE SAMPLED:	7/20/06
TIME SAMPLED:	9:17
BATCH ID:	080406A01
DATE ANALYZED:	8/8/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	50.0	ND	247	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	50.0	ND	350	ND
CHLOROMETHANE	74-87-3	50.0	ND	103	ND
VINYL CHLORIDE	75-01-4	50.0	ND	128	ND
BROMOMETHANE	74-83-9	50.0	ND	194	ND
CHLOROETHANE	75-00-3	50.0	ND	132	ND
TRICHLOROFLUOROMETHANE	75-69-4	50.0	ND	281	ND
1,1-DICHLOROETHENE	75-35-4	50.0	ND	198	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	50.0	ND	383	ND
METHYLENE CHLORIDE	75-09-2	50.0	ND	174	ND
1,1-DICHLOROETHANE	75-34-3	50.0	ND	202	ND
CIS-1,2-DICHLOROETHENE	156-59-2	50.0	ND	198	ND
CHLOROFORM	67-66-3	20.0	ND	97.7	ND
1,1,1-TRICHLOROETHANE	71-55-6	50.0	ND	273	ND
CARBON TETRACHLORIDE	56-23-5	50.0	ND	315	ND
1,2-DICHLOROETHANE	107-06-2	50.0	ND	202	ND
BENZENE	71-43-2	10.0	ND	31.9	ND
TRICHLOROETHENE	79-01-6	20.0	ND	107	ND
1,2-DICHLOROPROPANE	78-87-5	50.0	ND	231	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	50.0	ND	227	ND
TOLUENE	108-88-3	50.0	ND	188	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	50.0	ND	227	ND
1,1,2-TRICHLOROETHANE	79-00-5	50.0	ND	273	ND
TETRACHLOROETHENE	127-18-4	15.0	5880	102	39900
1,2-DIBROMOETHANE	106-93-4	50.0	ND	384	ND
CHLOROBENZENE	108-90-7	50.0	ND	230	ND
ETHYLBENZENE	100-41-4	50.0	ND	217	ND
XYLENE (M+P)	1330-20-7	50.0	ND	217	ND
XYLENE (O)	95-47-6	50.0	ND	217	ND
STYRENE	100-42-5	50.0	ND	213	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	50.0	ND	343	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	50.0	ND	246	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	50.0	ND	246	ND
1,3-DICHLOROBENZENE	541-73-1	50.0	ND	301	ND
1,4-DICHLOROBENZENE	106-46-7	50.0	ND	301	ND
1,2-DICHLOROBENZENE	95-50-1	50.0	ND	301	ND
1,2,4-TRICHLOROBENZENE	120-82-1	50.0	ND	371	ND
HEXACHLOROBUTADIENE	87-68-3	50.0	ND	533	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: AJK
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937VS105
LAB NO:	56720
SAMPLE TYPE:	AIR
DATE SAMPLED:	7/20/06
TIME SAMPLED:	9:53
BATCH ID:	080406A01
DATE ANALYZED:	8/8/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	5.00	ND	24.7	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	5.00	ND	35.0	ND
CHLOROMETHANE	74-87-3	5.00	ND	10.3	ND
VINYL CHLORIDE	75-01-4	5.00	ND	12.8	ND
BROMOMETHANE	74-83-9	5.00	ND	19.4	ND
CHLOROETHANE	75-00-3	5.00	ND	13.2	ND
TRICHLOROFLUOROMETHANE	75-69-4	5.00	ND	28.1	ND
1,1-DICHLOROETHENE	75-35-4	5.00	ND	19.8	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	5.00	ND	38.3	ND
METHYLENE CHLORIDE	75-09-2	5.00	ND	17.4	ND
1,1-DICHLOROETHANE	75-34-3	5.00	ND	20.2	ND
CIS-1,2-DICHLOROETHENE	156-59-2	5.00	ND	19.8	ND
CHLOROFORM	67-66-3	2.00	ND	9.8	ND
1,1,1-TRICHLOROETHANE	71-55-6	5.00	9.59	27.3	52.3
CARBON TETRACHLORIDE	56-23-5	5.00	ND	31.5	ND
1,2-DICHLOROETHANE	107-06-2	5.00	ND	20.2	ND
BENZENE	71-43-2	1.00	1.41	3.2	4.50
TRICHLOROETHENE	79-01-6	2.00	301	10.7	1620
1,2-DICHLOROPROPANE	78-87-5	5.00	ND	23.1	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	5.00	ND	22.7	ND
TOLUENE	108-88-3	5.00	ND	18.8	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	5.00	ND	22.7	ND
1,1,2-TRICHLOROETHANE	79-00-5	5.00	ND	27.3	ND
TETRACHLOROETHENE	127-18-4	1.50	787	10.2	5340
1,2-DIBROMOETHANE	106-93-4	5.00	ND	38.4	ND
CHLOROBENZENE	108-90-7	5.00	ND	23.0	ND
ETHYLBENZENE	100-41-4	5.00	ND	21.7	ND
XYLENE (M+P)	1330-20-7	5.00	ND	21.7	ND
XYLENE (O)	95-47-6	5.00	ND	21.7	ND
STYRENE	100-42-5	5.00	ND	21.3	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.00	ND	34.3	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	5.00	ND	24.6	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00	ND	24.6	ND
1,3-DICHLOROBENZENE	541-73-1	5.00	ND	30.1	ND
1,4-DICHLOROBENZENE	106-46-7	5.00	ND	30.1	ND
1,2-DICHLOROBENZENE	95-50-1	5.00	ND	30.1	ND
1,2,4-TRICHLOROBENZENE	120-82-1	5.00	ND	37.1	ND
HEXACHLOROBUTADIENE	87-68-3	5.00	ND	53.3	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: [signature]
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS106
LAB NO: 56721
SAMPLE TYPE: AIR
DATE SAMPLED: 7/20/06
TIME SAMPLED: 9:21
BATCH ID: 080406A01
DATE ANALYZED: 8/8/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	50.0	ND	247	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	50.0	ND	350	ND
CHLOROMETHANE	74-87-3	50.0	ND	103	ND
VINYL CHLORIDE	75-01-4	50.0	ND	128	ND
BROMOMETHANE	74-83-9	50.0	ND	194	ND
CHLOROETHANE	75-00-3	50.0	ND	132	ND
TRICHLOROFLUOROMETHANE	75-69-4	50.0	ND	281	ND
1,1-DICHLOROETHENE	75-35-4	50.0	ND	198	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	50.0	ND	383	ND
METHYLENE CHLORIDE	75-09-2	50.0	ND	174	ND
1,1-DICHLOROETHANE	75-34-3	50.0	ND	202	ND
CIS-1,2-DICHLOROETHENE	156-59-2	50.0	ND	198	ND
CHLOROFORM	67-66-3	20.0	ND	97.7	ND
1,1,1-TRICHLOROETHANE	71-55-6	50.0	ND	273	ND
CARBON TETRACHLORIDE	56-23-5	50.0	ND	315	ND
1,2-DICHLOROETHANE	107-06-2	50.0	ND	202	ND
BENZENE	71-43-2	10.0	ND	31.9	ND
TRICHLOROETHENE	79-01-6	20.0	ND	107	ND
1,2-DICHLOROPROPANE	78-87-5	50.0	ND	231	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	50.0	ND	227	ND
TOLUENE	108-88-3	50.0	ND	188	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	50.0	ND	227	ND
1,1,2-TRICHLOROETHANE	79-00-5	50.0	ND	273	ND
TETRACHLOROETHENE	127-18-4	15.0	92.6	102	628
1,2-DIBROMOETHANE	106-93-4	50.0	ND	384	ND
CHLOROBENZENE	108-90-7	50.0	ND	230	ND
ETHYLBENZENE	100-41-4	50.0	ND	217	ND
XYLENE (M+P)	1330-20-7	50.0	ND	217	ND
XYLENE (O)	95-47-6	50.0	ND	217	ND
STYRENE	100-42-5	50.0	ND	213	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	50.0	ND	343	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	50.0	ND	246	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	50.0	ND	246	ND
1,3-DICHLOROBENZENE	541-73-1	50.0	ND	301	ND
1,4-DICHLOROBENZENE	106-46-7	50.0	ND	301	ND
1,2-DICHLOROBENZENE	95-50-1	50.0	ND	301	ND
1,2,4-TRICHLOROBENZENE	120-82-1	50.0	ND	371	ND
HEXACHLOROBUTADIENE	87-68-3	50.0	ND	533	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: ________ [illegible]
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937VS107
LAB NO:	56722
SAMPLE TYPE:	AIR
DATE SAMPLED:	7/20/06
TIME SAMPLED:	10:18
BATCH ID:	080406A01
DATE ANALYZED:	8/8/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	10.0	ND	49.5	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	10.0	ND	69.9	ND
CHLOROMETHANE	74-87-3	10.0	ND	20.7	ND
VINYL CHLORIDE	75-01-4	10.0	ND	25.6	ND
BROMOMETHANE	74-83-9	10.0	ND	38.8	ND
CHLOROETHANE	75-00-3	10.0	ND	26.4	ND
TRICHLOROFLUOROMETHANE	75-69-4	10.0	ND	56.2	ND
1,1-DICHLOROETHENE	75-35-4	10.0	ND	39.7	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	10.0	ND	76.6	ND
METHYLENE CHLORIDE	75-09-2	10.0	ND	34.7	ND
1,1-DICHLOROETHANE	75-34-3	10.0	ND	40.5	ND
CIS-1,2-DICHLOROETHENE	156-59-2	10.0	ND	39.7	ND
CHLOROFORM	67-66-3	4.00	ND	19.5	ND
1,1,1-TRICHLOROETHANE	71-55-6	10.0	ND	54.6	ND
CARBON TETRACHLORIDE	56-23-5	10.0	ND	62.9	ND
1,2-DICHLOROETHANE	107-06-2	10.0	ND	40.5	ND
BENZENE	71-43-2	2.00	ND	6.39	ND
TRICHLOROETHENE	79-01-6	4.00	6.18	21.5	33.2
1,2-DICHLOROPROPANE	78-87-5	10.0	ND	46.2	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	10.0	ND	45.4	ND
TOLUENE	108-88-3	10.0	ND	37.7	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	10.0	ND	45.4	ND
1,1,2-TRICHLOROETHANE	79-00-5	10.0	ND	54.6	ND
TETRACHLOROETHENE	127-18-4	3.00	848	20.3	5750
1,2-DIBROMOETHANE	106-93-4	10.0	ND	76.8	ND
CHLOROBENZENE	108-90-7	10.0	ND	46.0	ND
ETHYLBENZENE	100-41-4	10.0	ND	43.4	ND
XYLENE (M+P)	1330-20-7	10.0	ND	43.4	ND
XYLENE (O)	95-47-6	10.0	ND	43.4	ND
STYRENE	100-42-5	10.0	ND	42.6	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	10.0	ND	68.7	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	10.0	ND	49.2	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	10.0	19.6	49.2	96.2
1,3-DICHLOROBENZENE	541-73-1	10.0	ND	60.1	ND
1,4-DICHLOROBENZENE	106-46-7	10.0	ND	60.1	ND
1,2-DICHLOROBENZENE	95-50-1	10.0	ND	60.1	ND
1,2,4-TRICHLOROBENZENE	120-82-1	10.0	ND	74.2	ND
HEXACHLOROBUTADIENE	87-68-3	10.0	ND	107	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
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µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: RMC
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID: 937VS107DUP
LAB NO: 56723
SAMPLE TYPE: AIR
DATE SAMPLED: 7/20/06
TIME SAMPLED: 10:18
BATCH ID: 080406A01
DATE ANALYZED: 8/8/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	10.0	ND	49.5	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	10.0	ND	69.9	ND
CHLOROMETHANE	74-87-3	10.0	ND	20.7	ND
VINYL CHLORIDE	75-01-4	10.0	ND	25.6	ND
BROMOMETHANE	74-83-9	10.0	ND	38.8	ND
CHLOROETHANE	75-00-3	10.0	ND	26.4	ND
TRICHLOROFLUOROMETHANE	75-69-4	10.0	ND	56.2	ND
1,1-DICHLOROETHENE	75-35-4	10.0	ND	39.7	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	10.0	ND	76.6	ND
METHYLENE CHLORIDE	75-09-2	10.0	ND	34.7	ND
1,1-DICHLOROETHANE	75-34-3	10.0	ND	40.5	ND
CIS-1,2-DICHLOROETHENE	156-59-2	10.0	ND	39.7	ND
CHLOROFORM	67-66-3	4.00	ND	19.5	ND
1,1,1-TRICHLOROETHANE	71-55-6	10.0	ND	54.6	ND
CARBON TETRACHLORIDE	56-23-5	10.0	ND	62.9	ND
1,2-DICHLOROETHANE	107-06-2	10.0	ND	40.5	ND
BENZENE	71-43-2	2.00	ND	6.39	ND
TRICHLOROETHENE	79-01-6	4.00	8.05	21.5	43.3
1,2-DICHLOROPROPANE	78-87-5	10.0	ND	46.2	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	10.0	ND	45.4	ND
TOLUENE	108-88-3	10.0	ND	37.7	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	10.0	ND	45.4	ND
1,1,2-TRICHLOROETHANE	79-00-5	10.0	ND	54.6	ND
TETRACHLOROETHENE	127-18-4	3.00	1100	20.3	7470
1,2-DIBROMOETHANE	106-93-4	10.0	ND	76.8	ND
CHLOROBENZENE	108-90-7	10.0	ND	46.0	ND
ETHYLBENZENE	100-41-4	10.0	ND	43.4	ND
XYLENE (M+P)	1330-20-7	10.0	23.4	43.4	102
XYLENE (O)	95-47-6	10.0	11.0	43.4	47.8
STYRENE	100-42-5	10.0	ND	42.6	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	10.0	ND	68.7	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	10.0	13.5	49.2	66.5
1,2,4-TRIMETHYLBENZENE	95-63-6	10.0	35.6	49.2	175
1,3-DICHLOROBENZENE	541-73-1	10.0	ND	60.1	ND
1,4-DICHLOROBENZENE	106-46-7	10.0	ND	60.1	ND
1,2-DICHLOROBENZENE	95-50-1	10.0	ND	60.1	ND
1,2,4-TRICHLOROBENZENE	120-82-1	10.0	ND	74.2	ND
HEXACHLOROBUTADIENE	87-68-3	10.0	ND	107	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
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µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: NMC
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937VS108
LAB NO:	56724
SAMPLE TYPE:	AIR
DATE SAMPLED:	7/20/06
TIME SAMPLED:	10:31
BATCH ID:	080406A01
DATE ANALYZED:	8/8/06

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	μg/cu. m MRL	μg/cu. m SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	2.50	ND	12.4	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	2.50	ND	17.5	ND
CHLOROMETHANE	74-87-3	2.50	ND	5.16	ND
VINYL CHLORIDE	75-01-4	2.50	ND	6.39	ND
BROMOMETHANE	74-83-9	2.50	ND	9.71	ND
CHLOROETHANE	75-00-3	2.50	ND	6.60	ND
TRICHLOROFLUOROMETHANE	75-69-4	2.50	ND	14.0	ND
1,1-DICHLOROETHENE	75-35-4	2.50	ND	9.91	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	2.50	ND	19.2	ND
METHYLENE CHLORIDE	75-09-2	2.50	ND	8.68	ND
1,1-DICHLOROETHANE	75-34-3	2.50	ND	10.1	ND
CIS-1,2-DICHLOROETHENE	156-59-2	2.50	ND	9.91	ND
CHLOROFORM	67-66-3	1.00	ND	4.88	ND
1,1,1-TRICHLOROETHANE	71-55-6	2.50	4.76	13.6	26.0
CARBON TETRACHLORIDE	56-23-5	2.50	ND	15.7	ND
1,2-DICHLOROETHANE	107-06-2	2.50	ND	10.1	ND
BENZENE	71-43-2	0.50	1.17	1.60	3.74
TRICHLOROETHENE	79-01-6	1.00	3.50	5.37	18.8
1,2-DICHLOROPROPANE	78-87-5	2.50	ND	11.6	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	2.50	ND	11.3	ND
TOLUENE	108-88-3	2.50	5.06	9.42	19.1
CIS-1,3-DICHLOROPROPENE	10061-01-5	2.50	ND	11.3	ND
1,1,2-TRICHLOROETHANE	79-00-5	2.50	ND	13.6	ND
TETRACHLOROETHENE	127-18-4	0.75	28.6	5.09	194.0
1,2-DIBROMOETHANE	106-93-4	2.50	ND	19.2	ND
CHLOROBENZENE	108-90-7	2.50	ND	11.5	ND
ETHYLBENZENE	100-41-4	2.50	ND	10.9	ND
XYLENE (M+P)	1330-20-7	2.50	8.62	10.9	37.4
XYLENE (O)	95-47-6	2.50	3.42	10.9	14.8
STYRENE	100-42-5	2.50	ND	10.6	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50	ND	17.2	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	2.50	ND	12.3	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	2.50	4.93	12.3	24.2
1,3-DICHLOROBENZENE	541-73-1	2.50	ND	15.0	ND
1,4-DICHLOROBENZENE	106-46-7	2.50	ND	15.0	ND
1,2-DICHLOROBENZENE	95-50-1	2.50	ND	15.0	ND
1,2,4-TRICHLOROBENZENE	120-82-1	2.50	ND	18.6	ND
HEXACHLOROBUTADIENE	87-68-3	2.50	ND	26.7	ND

NOTES:
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MRL - METHOD REPORTING LIMIT
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μg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MK
DATE: 8/9/06

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

SAMPLE ID:	937VS109
LAB NO:	56725
SAMPLE TYPE:	AIR
DATE SAMPLED:	7/20/06
TIME SAMPLED:	10:25
BATCH ID:	080406A01
DATE ANALYZED:	8/8/06

		PPB (V/V)		µg/cu. m	
COMPOUND NAME	**CAS NO.**	**MRL**	**SAMPLE CONC**	**MRL**	**SAMPLE CONC**
DICHLORODIFLUOROMETHANE	75-71-8	1.00	ND	4.95	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	1.00	ND	6.99	ND
CHLOROMETHANE	74-87-3	1.00	ND	2.07	ND
VINYL CHLORIDE	75-01-4	1.00	ND	2.56	ND
BROMOMETHANE	74-83-9	1.00	ND	3.88	ND
CHLOROETHANE	75-00-3	1.00	ND	2.64	ND
TRICHLOROFLUOROMETHANE	75-69-4	1.00	ND	5.62	ND
1,1-DICHLOROETHENE	75-35-4	1.00	ND	3.97	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	1.00	ND	7.66	ND
METHYLENE CHLORIDE	75-09-2	1.00	ND	3.47	ND
1,1-DICHLOROETHANE	75-34-3	1.00	ND	4.05	ND
CIS-1,2-DICHLOROETHENE	156-59-2	1.00	ND	3.97	ND
CHLOROFORM	67-66-3	0.40	4.08	1.95	19.9
1,1,1-TRICHLOROETHANE	71-55-6	1.00	ND	5.46	ND
CARBON TETRACHLORIDE	56-23-5	1.00	ND	6.29	ND
1,2-DICHLOROETHANE	107-06-2	1.00	ND	4.05	ND
BENZENE	71-43-2	0.20	1.14	0.64	3.64
TRICHLOROETHENE	79-01-6	0.40	3.45	2.15	18.5
1,2-DICHLOROPROPANE	78-87-5	1.00	ND	4.62	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	1.00	ND	4.54	ND
TOLUENE	108-88-3	1.00	2.57	3.77	9.680
CIS-1,3-DICHLOROPROPENE	10061-01-5	1.00	ND	4.54	ND
1,1,2-TRICHLOROETHANE	79-00-5	1.00	ND	5.46	ND
TETRACHLOROETHENE	127-18-4	0.30	31.9	2.03	216
1,2-DIBROMOETHANE	106-93-4	1.00	ND	7.68	ND
CHLOROBENZENE	108-90-7	1.00	ND	4.60	ND
ETHYLBENZENE	100-41-4	1.00	ND	4.34	ND
XYLENE (M+P)	1330-20-7	1.00	3.61	4.34	15.7
XYLENE (O)	95-47-6	1.00	1.17	4.34	5.08
STYRENE	100-42-5	1.00	ND	4.26	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00	ND	6.87	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	1.00	ND	4.92	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	1.00	1.69	4.92	8.31
1,3-DICHLOROBENZENE	541-73-1	1.00	ND	6.01	ND
1,4-DICHLOROBENZENE	106-46-7	1.00	ND	6.01	ND
1,2-DICHLOROBENZENE	95-50-1	1.00	ND	6.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND	7.42	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND	10.7	ND

NOTES:
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µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

APPROVED BY: MTC
DATE: 8/9/06

K PRIME, INC.

LABORATORY METHOD BLANK REPORT

METHOD BLANK ID: B08040601
SAMPLE TYPE: AIR

BATCH ID: 080406A01
DATE ANALYZED: 8/4/06

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

COMPOUND NAME	CAS NO.	PPB (V/V) MRL	PPB (V/V) SAMPLE CONC	µg/cu. m MRL	µg/cu. m SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	0.50	ND	2.47	ND
DICHLOROTETRAFLUOROETHANE	76-14-2	0.50	ND	3.50	ND
CHLOROMETHANE	74-87-3	0.50	ND	1.03	ND
VINYL CHLORIDE	75-01-4	0.50	ND	1.28	ND
BROMOMETHANE	74-83-9	0.50	ND	1.94	ND
CHLOROETHANE	75-00-3	0.50	ND	1.32	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.50	ND	2.81	ND
1,1-DICHLOROETHENE	75-35-4	0.50	ND	1.98	ND
TRICHLOROTRIFLUOROETHANE	76-13-1	0.50	ND	3.83	ND
METHYLENE CHLORIDE	75-09-2	0.50	ND	1.74	ND
1,1-DICHLOROETHANE	75-34-3	0.50	ND	2.02	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.50	ND	1.98	ND
CHLOROFORM	67-66-3	0.20	ND	0.98	ND
1,1,1-TRICHLOROETHANE	71-55-6	0.50	ND	2.73	ND
CARBON TETRACHLORIDE	56-23-5	0.50	ND	3.15	ND
1,2-DICHLOROETHANE	107-06-2	0.50	ND	2.02	ND
BENZENE	71-43-2	0.10	ND	0.32	ND
TRICHLOROETHENE	79-01-6	0.20	ND	1.07	ND
1,2-DICHLOROPROPANE	78-87-5	0.50	ND	2.31	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.50	ND	2.27	ND
TOLUENE	108-88-3	0.50	ND	1.88	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.50	ND	2.27	ND
1,1,2-TRICHLOROETHANE	79-00-5	0.50	ND	2.73	ND
TETRACHLOROETHENE	127-18-4	0.15	ND	1.02	ND
1,2-DIBROMOETHANE	106-93-4	0.50	ND	3.84	ND
CHLOROBENZENE	108-90-7	0.50	ND	2.30	ND
ETHYLBENZENE	100-41-4	0.50	ND	2.17	ND
XYLENE (M+P)	1330-20-7	0.50	ND	2.17	ND
XYLENE (O)	95-47-6	0.50	ND	2.17	ND
STYRENE	100-42-5	0.50	ND	2.13	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.50	ND	3.43	ND
1,3,5-TRIMETHYLBENZENE	108-67-8	0.50	ND	2.46	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.50	ND	2.46	ND
1,3-DICHLOROBENZENE	541-73-1	0.50	ND	3.01	ND
1,4-DICHLOROBENZENE	106-46-7	0.50	ND	3.01	ND
1,2-DICHLOROBENZENE	95-50-1	0.50	ND	3.01	ND
1,2,4-TRICHLOROBENZENE	120-82-1	0.50	ND	3.71	ND
HEXACHLOROBUTADIENE	87-68-3	0.50	ND	5.33	ND

NOTES:

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MRL - METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
µg/cu. m VALUES ARE CALCULATED FROM PPB RESULTS USING NORMAL TEMPERATURE AND PRESSURE (NPT).

K PRIME, INC.
LABORATORY QUALITY CONTROL REPORT

LAB CONTROL ID: L080406A01
LAB CONTROL DUPLICATE ID: D080406A01

SAMPLE TYPE: AIR
BATCH ID: 080406A01
DATE ANALYZED: 8/4/06

METHOD: VOC'S IN AIR
REFERENCE: EPA METHOD TO 15 (GC-MS-SCAN)

COMPOUND NAME	SPIKE ADDED (PPB)	REPORTING LIMIT (PPB)	SAMPLE CONC (PPB)	SPIKE CONC (PPB)	SPIKE REC (%)	REC LIMITS (%)
1,1-DICHLOROETHENE	10.0	0.50	ND	7.33	73.3	60 - 140
TRICHLOROETHENE	10.0	0.20	ND	8.58	85.8	60 - 140
BENZENE	10.0	0.10	ND	7.16	71.6	60 - 140
TOLUENE	10.0	0.50	ND	8.57	85.7	60 - 140
TETRACHLOROETHENE	10.0	0.15	ND	9.35	93.5	60 - 140

COMPOUND NAME	SPIKE ADDED (PPB)	SPIKE DUP CONC (PPB)	SPIKE DUP REC (%)	RPD (%)	QC LIMITS RPD (%)	QC LIMITS REC (%)
1,1-DICHLOROETHENE	10.0	8.32	83.2	12.7	25.0	60 - 140
TRICHLOROETHENE	10.0	10.1	101	16.6	25.0	60 - 140
BENZENE	10.0	8.06	80.6	11.8	25.0	60 - 140
TOLUENE	10.0	10.9	109	23.8	25.0	60 - 140
TETRACHLOROETHENE	10.0	11.3	113	18.7	25.0	60 - 140

NOTES:
NA - NOT APPLICABLE OR AVAILABLE
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9115
CLIENT PROJECT: A000003.08

BATCH ID: 071006A01

METHOD: 1,1,1,2-TETRAFLUOROETHANE
REFERENCE: EPA TO 3

UNITS: UG/M3

SAMPLE ID	LAB NO.	SAMPLE TYPE	DATE SAMPLED	TIME SAMPLED	DATE ANALYZED	MRL	SAMPLE CONC
937VS101	56716	AIR	7/20/06	8:30	7/25/06	8300	660000
937VS102	56717	AIR	7/20/06	8:35	7/25/06	8300	41000
937VS103	56718	AIR	7/20/06	8:38	7/25/06	8300	23000
937VS104	56719	AIR	7/20/06	9:17	7/25/06	8300	60000
937VS105	56720	AIR	7/20/06	9:53	7/25/06	8300	ND
937VS106	56721	AIR	7/20/06	9:21	7/25/06	8300	520000
937VS107	56722	AIR	7/20/06	10:18	7/25/06	8300	ND
937VS107DUP	56723	AIR	7/20/06	10:18	7/25/06	8300	ND
937VS108	56724	AIR	7/20/06	10:31	7/25/06	8300	50000
937VS109	56725	AIR	7/20/06	10:25	7/25/06	8300	12000

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED METHOD REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE
MRL - METHOD REPORTING LIMIT
DIFLUOROETHANE CO-ELUTES WITH TETRAFLUOROETHANE

APPROVED BY: MN
DATE: 8/9/06

Erler & Kalinowski, Inc.
CONSULTING ENGINEERS AND SCIENTISTS
1870 Ogden Drive, Burlingame CA 94010
PHONE: 650-292-9100
FAX: 650-552-9012

CHAIN OF CUSTODY RECORD

EKI COC No.: Gas 5
Revision: ______ (A, B, C, D, etc.)

Project Name: Presidio
Project No.: A000003.08
Location: 937 Marine Drive/Bldg. 937
Sampled By: Roger Lion
Reporting: (circle all that apply)
Hard Copy Format: PDF FAX
Electronic Format: EDD EDF (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III/IV 10% LEVEL IV REMAINDER LEVEL III
Report results to (email ~~or fax no.~~):
(1) npozdnyakova@ekiconsult.com (2) aabeles@ekiconsult.com
(3) mkking@ekiconsult.com (4) jdewitt@ekiconsult.com

Laboratory: (Address/Phone No./Contact Person)
K-Prime
3621 Westwind Blvd.
Santa Rosa, CA 95403
(707) 527-7574
Contact: Rich or Karla Kagel

ANALYSES REQUESTED: Method No.: TO-15; Analyte Group: FULL SCAN VOCs * *

Field Sample Identification	Lab Sample No.	Date	START Time	Matrix	No./Type of Containers and Preservative	TO-15 FULL SCAN VOCs	EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937VS101	56716	07/20/06	08:30	AIR	1-6l summa	X			STANDARD	A-423
937VS102	56717	↓	08:35	↓	↓	X			↓	A-809
937VS103	56718		08:38			X				A-202
937VS104	56719		09:17			X				A-101
937VS105	56720		09:53			X				A-605
937VS106	56721		09:21			X				A-637
937VS107	56722		10:18			X				A-801
937VS107DUP	56723		10:18			X				A-421
937VS108	56724		10:31			X				A-433
937VS109	56725	↓	10:25	↓	↓	X			↓	A-702

Special Instructions/Notes:
* INCLUDE 1,1,1,2 TETRAFLUOROETHANE IN ANALYSIS
* INCLUDE TICs EXCEPT SILICONE PRODUCTS.

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Roger Lion EKI	7/21/6	12:06	[signature] (VTC) 7/21/06 12:06
[signature] (VTC)	7/21/06	2:45	Cindy Finnell 7/21/06 4:45

ANALYTICAL REPORT

Job Number: 720-4114-1

Job Description: Presidio 937 Marine drive/Bldg. 937

For:
Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010

Attention: Mr. Adam Abeles

Afsaneh Salimpour
Project Manager I
asalimpour@stl-inc.com
09/18/2006
Revision: 1

cc: Mr. John Dewitt
Mr. Nina Pozdnyakova

Project Manager: Afsaneh Salimpour

Severn Trent Laboratories, Inc.
STL San Francisco 1220 Quarry Lane, Pleasanton, CA 94566
Tel (925) 484-1919 Fax (925) 484-1096 www.stl-inc.com

EXECUTIVE SUMMARY - Detections

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method

No Detections

METHOD SUMMARY

Client: Erler & Kalinowski, Inc.   Job Number: 720-4114-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds by GC/MS (Low Level)	STL SF	SW846 8260B	
Purge-and-Trap	STL SF		SW846 5030B

LAB REFERENCES:

STL SF = STL San Francisco

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Method	Analyst	Analyst ID
SW846 8260B	Chen, Amy	AC

SAMPLE SUMMARY

Client: Erler & Kalinowski, Inc.

Job Number: 720-4114-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-4114-1	937WP01	Water	06/14/2006 1050	06/15/2006 1855
720-4114-2	937WP04	Water	06/14/2006 0918	06/15/2006 1855
720-4114-3	937WP04 DUP	Water	06/14/2006 0918	06/15/2006 1855
720-4114-4	937WP01 DUP	Water	06/14/2006 1050	06/15/2006 1855

Analytical Data

Client: Erler & Kalinowski, Inc. | Job Number: 720-4114-1

Client Sample ID: **937WP01**

Lab Sample ID:	720-4114-1	Date Sampled:	06/14/2006 1050
Client Matrix:	Water	Date Received:	06/15/2006 1855

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1718		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1718			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Client Sample ID: 937WP01

Lab Sample ID:	720-4114-1	Date Sampled:	06/14/2006 1050
Client Matrix:	Water	Date Received:	06/15/2006 1855

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1718		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1718			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	96	79 - 118
1,2-Dichloroethane-d4 (Surr)	97	78 - 117
Toluene-d8 (Surr)	98	77 - 121

Client: Erler & Kalinowski, Inc. | Job Number: 720-4114-1

Client Sample ID: 937WP04

Lab Sample ID:	720-4114-2	Date Sampled:	06/14/2006 0918
Client Matrix:	Water	Date Received:	06/15/2006 1855

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1752		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1752			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Client Sample ID: 937WP04

Lab Sample ID:	720-4114-2	Date Sampled:	06/14/2006 0918
Client Matrix:	Water	Date Received:	06/15/2006 1855

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1752		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1752			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	93	79 - 118
1,2-Dichloroethane-d4 (Surr)	96	78 - 117
Toluene-d8 (Surr)	99	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Client Sample ID: 937WP04 DUP

Lab Sample ID:	720-4114-3	Date Sampled:	06/14/2006 0918
Client Matrix:	Water	Date Received:	06/15/2006 1855

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1826		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1826			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc.

Job Number: 720-4114-1

Client Sample ID: 937WP04 DUP

Lab Sample ID:	720-4114-3	Date Sampled:	06/14/2006 0918
Client Matrix:	Water	Date Received:	06/15/2006 1855

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1826		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1826			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	95	79 - 118
1,2-Dichloroethane-d4 (Surr)	102	78 - 117
Toluene-d8 (Surr)	96	77 - 121

Client: Erler & Kalinowski, Inc.　　Job Number: 720-4114-1

Client Sample ID: 937WP01 DUP

Lab Sample ID:	720-4114-4	Date Sampled:	06/14/2006 1050
Client Matrix:	Water	Date Received:	06/15/2006 1855

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1900		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1900			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Client Sample ID: 937WP01 DUP

Lab Sample ID:	720-4114-4	Date Sampled:	06/14/2006 1050
Client Matrix:	Water	Date Received:	06/15/2006 1855

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1900		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1900			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	93	79 - 118
1,2-Dichloroethane-d4 (Surr)	100	78 - 117
Toluene-d8 (Surr)	98	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:720-10199					
LCS 720-10199/15	Lab Control Spike	T	Water	8260B	
LCSD 720-10199/16	Lab Control Spike Duplicate	T	Water	8260B	
MB 720-10199/17	Method Blank	T	Water	8260B	
720-4114-1	937WP01	T	Water	8260B	
720-4114-2	937WP04	T	Water	8260B	
720-4114-3	937WP04 DUP	T	Water	8260B	
720-4114-4	937WP01 DUP	T	Water	8260B	
720-4194-B-2 MS	Matrix Spike	T	Water	8260B	
720-4194-C-2 MSD	Matrix Spike Duplicate	T	Water	8260B	

Report Basis

T = Total

Quality Control Results

Client: Erler & Kalinowski, Inc.   Job Number: 720-4114-1

Method Blank - Batch: 720-10199

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 720-10199/17
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/21/2006 1019
Date Prepared: 06/21/2006 1019

Analysis Batch: 720-10199
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200606\0
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Method Blank - Batch: 720-10199

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 720-10199/17
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/21/2006 1019
Date Prepared: 06/21/2006 1019

Analysis Batch: 720-10199
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200606\0(
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

Analyte	Result	Qual	RL
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	99	79 - 118
1,2-Dichloroethane-d4 (Surr)	107	78 - 117
Toluene-d8 (Surr)	94	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-10199

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID: LCS 720-10199/15
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/21/2006 0945
Date Prepared: 06/21/2006 0945

Analysis Batch: 720-10199
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200606\06
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

LCSD Lab Sample ID: LCSD 720-10199/16
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/21/2006 1248
Date Prepared: 06/21/2006 1248

Analysis Batch: 720-10199
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200606\062
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

Analyte	% Rec. LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	95	93	69 - 129	2	20		
Chlorobenzene	97	100	61 - 121	3	20		
1,1-Dichloroethene	90	90	65 - 125	0	20		
Toluene	95	89	70 - 130	6	20		
Trichloroethene	91	87	74 - 134	4	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	99	96	79 - 118
1,2-Dichloroethane-d4 (Surr)	105	96	78 - 117
Toluene-d8 (Surr)	95	94	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-10199

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	720-4194-B-2 MS	Analysis Batch:	720-10199	Instrument ID:	Varian 3900G
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	c:\saturnws\data\200606\(
Dilution:	1.0			Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1503			Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1503				

MSD Lab Sample ID:	720-4194-C-2 MSD	Analysis Batch:	720-10199	Instrument ID:	Varian 3900G
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0			Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1537			Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1537				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	85	95	69 - 129	12	20		
Chlorobenzene	95	101	61 - 121	6	20		
1,1-Dichloroethene	83	91	65 - 125	9	20		
Toluene	86	96	70 - 130	12	20		
Trichloroethene	81	94	74 - 134	15	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	93	95	79 - 118
1,2-Dichloroethane-d4 (Surr)	101	98	78 - 117
Toluene-d8 (Surr)	97	98	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

720-4114

100387

Erler & Kalinowski, Inc.

CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

PAGE 1 OF 1

Project Name: Presidio

Project No.: A000003.08

Location: 937 Marine Drive/Bldg. 937

Sampled By: A.G. Abeles/R. Lion

Reporting: (circle all that apply)

Hard Copy Format: PDF FAX

Electronic Format: EDF (CA State)

Provide Chromatograms: NO

EPA Data Report Level: III/IV

Report results to (email or fax no.):

(1) npozdnyakova@ekiconsult.com (2) aabeles@ekiconsult.com

(3) mkking@ekiconsult.com (4) jdewitt@ekiconsult.com

Laboratory: (Address/Phone No./Contact Person)

STL San Francisco

1220 Quarry Lane

Pleasanton, CA 94566

(925) 484-1919

Contact: Dimple Sharma

EKI COC No.: Water 1

Revision: ________ (A, B, C, D, etc.)

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	Method No. EPA 8260 / Analyte Group VOCs	EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937WP01		14 June [illegible]	10:50	Water	3 VOAs	X			STD	
937WP04		"	9:18	"	"	X			STD	
937WP04 DUP		"	9:18	"	"	X			STD	
937WP01 DUP		"	10:50	"	"			X		

Special Instructions/Notes:

Temp. 3°C

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
[signature] EKI	6/15/06	5:05	[signature] STL-SF
[illegible] 6/15/06	6/15/06	8:55	[signature] STL-SF

LOGIN SAMPLE RECEIPT CHECK LIST

Client: Erler & Kalinowski, Inc. Job Number: 720-4114-1

Login Number: 4114

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

ANALYTICAL REPORT

Job Number: 720-4194-1

Job Description: Presidio 937 Marine drive/Bldg. 937

For:
Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010

Attention: Mr. Adam Abeles

Afsaneh Salimpour
Project Manager I
asalimpour@stl-inc.com

09/15/2006
Revision: 1

cc: Mr. John Dewitt
Mr. Nina Pozdnyakova

Project Manager: Afsaneh Salimpour

Severn Trent Laboratories, Inc.
STL San Francisco   1220 Quarry Lane, Pleasanton, CA 94566
Tel (925) 484-1919 Fax (925) 484-1096 www.stl-inc.com

EXECUTIVE SUMMARY - Detections

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-4194-1	**933SB101**				
Dichlorobromomethane		0.70	0.50	ug/L	8260B
Trichloroethene		0.56	0.50	ug/L	8260B
720-4194-3	**937SB111**				
Chlorobenzene		0.92	0.50	ug/L	8260B
Tetrachloroethene		1.6	0.50	ug/L	8260B
720-4194-4	**937SB113**				
Tetrachloroethene		2.5	0.50	ug/L	8260B
720-4194-5	**937SB114**				
Tetrachloroethene		0.95	0.50	ug/L	8260B
720-4194-6	**937SB119**				
Tetrachloroethene		0.92	0.50	ug/L	8260B
720-4194-8	**937SB115**				
Tetrachloroethene		0.90	0.50	ug/L	8260B
Trichloroethene		0.63	0.50	ug/L	8260B

METHOD SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds by GC/MS (Low Level)	STL SF	SW846 8260B	
Purge-and-Trap	STL SF		SW846 5030B

LAB REFERENCES:

STL SF = STL San Francisco

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Method	Analyst	Analyst ID
SW846 8260B	Chen, Amy	AC

SAMPLE SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-4194-1	933SB101	Water	06/20/2006 0900	06/20/2006 1805
720-4194-2	933SB102	Water	06/20/2006 1000	06/20/2006 1805
720-4194-3	937SB111	Water	06/20/2006 1420	06/20/2006 1805
720-4194-4	937SB113	Water	06/20/2006 1445	06/20/2006 1805
720-4194-5	937SB114	Water	06/20/2006 1450	06/20/2006 1805
720-4194-6	937SB119	Water	06/20/2006 1430	06/20/2006 1805
720-4194-7TB	TB	Water	06/20/2006 0905	06/20/2006 1805
720-4194-8	937SB115	Water	06/20/2006 1530	06/20/2006 1805

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 933SB101

Lab Sample ID:	720-4194-1	Date Sampled:	06/20/2006 0900
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1610		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1610			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	0.70		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 933SB101

Lab Sample ID:	720-4194-1	Date Sampled:	06/20/2006 0900
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1610		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1610			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	0.56		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	93	79 - 118
1,2-Dichloroethane-d4 (Surr)	105	78 - 117
Toluene-d8 (Surr)	98	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 933SB102

Lab Sample ID:	720-4194-2	Date Sampled:	06/20/2006 1000
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID: Varian 3900G
Preparation:	5030B		Lab File ID: c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	06/21/2006 1322		Final Weight/Volume: 40 mL
Date Prepared:	06/21/2006 1322		

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 933SB102

Lab Sample ID:	720-4194-2	Date Sampled:	06/20/2006 1000
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1322		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1322			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	97	79 - 118
1,2-Dichloroethane-d4 (Surr)	96	78 - 117
Toluene-d8 (Surr)	93	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 937SB111

Lab Sample ID:	720-4194-3	Date Sampled:	06/20/2006 1420
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1644		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1644			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	0.92		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 937SB111

Lab Sample ID:	720-4194-3	Date Sampled:	06/20/2006 1420
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1644		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1644			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	1.6		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	99	79 - 118
1,2-Dichloroethane-d4 (Surr)	106	78 - 117
Toluene-d8 (Surr)	99	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 937SB113

Lab Sample ID:	720-4194-4	Date Sampled:	06/20/2006 1445
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1429		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1429			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 937SB113

Lab Sample ID:	720-4194-4	Date Sampled:	06/20/2006 1445
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID: Varian 3900G
Preparation:	5030B		Lab File ID: c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	06/21/2006 1429		Final Weight/Volume: 40 mL
Date Prepared:	06/21/2006 1429		

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	2.5		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	94	79 - 118
1,2-Dichloroethane-d4 (Surr)	101	78 - 117
Toluene-d8 (Surr)	95	77 - 121

Analytical Data

Client: Erler & Kalinowski, Inc. | Job Number: 720-4194-1

Client Sample ID: **937SB114**

Lab Sample ID:	720-4194-5	Date Sampled:	06/20/2006 1450
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1933		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1933			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. | Job Number: 720-4194-1

Client Sample ID: 937SB114

Lab Sample ID:	720-4194-5	Date Sampled:	06/20/2006 1450
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1933		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1933			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	0.95		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	94	79 - 118
1,2-Dichloroethane-d4 (Surr)	99	78 - 117
Toluene-d8 (Surr)	94	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 937SB119

Lab Sample ID:	720-4194-6	Date Sampled:	06/20/2006 1430
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 2007		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 2007			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: **937SB119**

Lab Sample ID:	720-4194-6	Date Sampled:	06/20/2006 1430
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID: Varian 3900G
Preparation:	5030B		Lab File ID: c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	06/21/2006 2007		Final Weight/Volume: 40 mL
Date Prepared:	06/21/2006 2007		

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	0.92		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	98	79 - 118
1,2-Dichloroethane-d4 (Surr)	107	78 - 117
Toluene-d8 (Surr)	96	77 - 121

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: TB

Lab Sample ID:	720-4194-7TB	Date Sampled:	06/20/2006 0905
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1106		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1106			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: TB

Lab Sample ID:	720-4194-7TB	Date Sampled:	06/20/2006 0905
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/21/2006 1106		Final Weight/Volume:	40 mL
Date Prepared:	06/21/2006 1106			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	102	79 - 118
1,2-Dichloroethane-d4 (Surr)	96	78 - 117
Toluene-d8 (Surr)	90	77 - 121

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 937SB115

Lab Sample ID:	720-4194-8	Date Sampled:	06/20/2006 1530
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1149		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1149			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Client Sample ID: 937SB115

Lab Sample ID:	720-4194-8	Date Sampled:	06/20/2006 1530
Client Matrix:	Water	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1149		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1149			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	0.90		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	0.63		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	99	79 - 118
1,2-Dichloroethane-d4 (Surr)	109	78 - 117
Toluene-d8 (Surr)	105	77 - 121

DATA REPORTING QUALIFIERS

Lab Section	Qualifier	Description

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:720-10199					
LCS 720-10199/15	Lab Control Spike	T	Water	8260B	
LCSD 720-10199/16	Lab Control Spike Duplicate	T	Water	8260B	
MB 720-10199/17	Method Blank	T	Water	8260B	
720-4194-1	933SB101	T	Water	8260B	
720-4194-2	933SB102	T	Water	8260B	
720-4194-2MS	Matrix Spike	T	Water	8260B	
720-4194-2MSD	Matrix Spike Duplicate	T	Water	8260B	
720-4194-3	937SB111	T	Water	8260B	
720-4194-4	937SB113	T	Water	8260B	
720-4194-5	937SB114	T	Water	8260B	
720-4194-6	937SB119	T	Water	8260B	
720-4194-7TB	TB	T	Water	8260B	
Analysis Batch:720-10236					
LCS 720-10236/7	Lab Control Spike	T	Water	8260B	
LCSD 720-10236/8	Lab Control Spike Duplicate	T	Water	8260B	
MB 720-10236/9	Method Blank	T	Water	8260B	
720-4194-8	937SB115	T	Water	8260B	
720-4217-B-1 MS	Matrix Spike	T	Water	8260B	
720-4217-C-1 MSD	Matrix Spike Duplicate	T	Water	8260B	

Report Basis
T = Total

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Method Blank - Batch: 720-10199

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 720-10199/17
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/21/2006 1019
Date Prepared: 06/21/2006 1019

Analysis Batch: 720-10199
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200606\06
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Method Blank - Batch: 720-10199

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 720-10199/17
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/21/2006 1019
Date Prepared: 06/21/2006 1019

Analysis Batch: 720-10199
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200606\06
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

Analyte	Result	Qual	RL
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	99	79 - 118
1,2-Dichloroethane-d4 (Surr)	107	78 - 117
Toluene-d8 (Surr)	94	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-10199

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID: LCS 720-10199/15	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Client Matrix: Water	Prep Batch: N/A	Lab File ID:	c:\saturnws\data\200606\0(
Dilution: 1.0	Units: ug/L	Initial Weight/Volume:	40 mL
Date Analyzed: 06/21/2006 0945		Final Weight/Volume:	40 mL
Date Prepared: 06/21/2006 0945			

LCSD Lab Sample ID: LCSD 720-10199/16	Analysis Batch: 720-10199	Instrument ID:	Varian 3900G
Client Matrix: Water	Prep Batch: N/A	Lab File ID:	c:\saturnws\data\200606\062
Dilution: 1.0	Units: ug/L	Initial Weight/Volume:	40 mL
Date Analyzed: 06/21/2006 1248		Final Weight/Volume:	40 mL
Date Prepared: 06/21/2006 1248			

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	95	93	69 - 129	2	20		
Chlorobenzene	97	100	61 - 121	3	20		
1,1-Dichloroethene	90	90	65 - 125	0	20		
Toluene	95	89	70 - 130	6	20		
Trichloroethene	91	87	74 - 134	4	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	99	96	79 - 118
1,2-Dichloroethane-d4 (Surr)	105	96	78 - 117
Toluene-d8 (Surr)	95	94	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-10199

Method: 8260B
Preparation: 5030B

MS Lab Sample ID: 720-4194-2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/21/2006 1503
Date Prepared: 06/21/2006 1503

Analysis Batch: 720-10199
Prep Batch: N/A

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200606\(
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

MSD Lab Sample ID: 720-4194-2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/21/2006 1537
Date Prepared: 06/21/2006 1537

Analysis Batch: 720-10199
Prep Batch: N/A

Instrument ID: Varian 3900G
Lab File ID: c:\saturnws\data\200606\06
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	85	95	69 - 129	12	20		
Chlorobenzene	95	101	61 - 121	6	20		
1,1-Dichloroethene	83	91	65 - 125	9	20		
Toluene	86	96	70 - 130	12	20		
Trichloroethene	81	94	74 - 134	15	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	93	95	79 - 118
1,2-Dichloroethane-d4 (Surr)	101	98	78 - 117
Toluene-d8 (Surr)	97	98	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc.

Job Number: 720-4194-1

Method Blank - Batch: 720-10236

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 720-10236/9
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/22/2006 1115
Date Prepared: 06/22/2006 1115

Analysis Batch: 720-10236
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900F
Lab File ID: c:\saturnws\data\200606\0(
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc.

Job Number: 720-4194-1

Method Blank - Batch: 720-10236

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 720-10236/9	Analysis Batch:	720-10236	Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	c:\saturnws\data\200606\0(
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1115			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1115				

Analyte	Result	Qual	RL
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	101	79 - 118
1,2-Dichloroethane-d4 (Surr)	108	78 - 117
Toluene-d8 (Surr)	106	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-10236

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-10236/7	Analysis Batch: 720-10236		Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0	Units: ug/L		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1008			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1008				

LCSD Lab Sample ID:	LCSD 720-10236/8	Analysis Batch: 720-10236		Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	c:\saturnws\data\200606\062
Dilution:	1.0	Units: ug/L		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1042			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1042				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	97	101	69 - 129	5	20		
Chlorobenzene	102	106	61 - 121	4	20		
1,1-Dichloroethene	86	91	65 - 125	6	20		
Toluene	103	103	70 - 130	1	20		
Trichloroethene	91	95	74 - 134	4	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	96	101	79 - 118
1,2-Dichloroethane-d4 (Surr)	103	109	78 - 117
Toluene-d8 (Surr)	112	109	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-10236

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	720-4217-B-1 MS	Analysis Batch:	720-10236	Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	c:\saturnws\data\200606\(
Dilution:	1.0			Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1402			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1402				

MSD Lab Sample ID:	720-4217-C-1 MSD	Analysis Batch:	720-10236	Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	c:\saturnws\data\200606\0(
Dilution:	1.0			Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1436			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1436				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	99	98	69 - 129	0	20		
Chlorobenzene	110	108	61 - 121	2	20		
1,1-Dichloroethene	93	94	65 - 125	1	20		
Toluene	105	102	70 - 130	3	20		
Trichloroethene	98	95	74 - 134	2	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	104	105	79 - 118
1,2-Dichloroethane-d4 (Surr)	109	113	78 - 117
Toluene-d8 (Surr)	112	109	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

720-4194 100471

Erler & Kalinowski, Inc. **CHAIN OF CUSTODY RECORD** PAGE 1 OF 1

CONSULTING ENGINEERS AND SCIENTISTS 1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: Presidio
Project No.: A000003.08
Location: Building 937
Sampled By: Z. Maliga
Reporting: (circle all that apply)
Hard Copy Format: PDF
Electronic Format: EDF (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III/IV (See Remarks)
Report results to (email or fax no.):
(1) mkking@ekiconsult.com (Michelle King)
(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

Laboratory: (Address/Phone No./Contact Person)
Attn: Dimple Sharma
STL San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919
Fax: 925-484-1096

EKI COC No.: 1
Revision: ____ (A, B, C, D, etc.)

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	EPA 8260B VOCs	EPA 6020 Title 22 Metals	EPA 8015M TPH-D	EPA 8015M TPH-G					EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
933SB101		6/20/06	9:00	WATER	3 VOAs	X										STD	Level IV (4)
933SB102		"	10:00	"	"	X										"	" IV (3)
937SB111		"	14:20	"	"	X										"	" III (3)
937SB113		"	14:45	"	"	X										"	" III (3)
937SB114		"	14:50	"	"	X										"	" III (3)
937SB119		"	14:30	"	"	X										"	" III (3)
TB		"	9:05	"	2 VOAs	X										"	" III (3)
937SB115		"	15:30	"	3 VOAs	X										"	" III (3)

Special Instructions/Notes:
Temp. 2°C

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Zoltan Maliga	6/20/06	16:00	[signature]
[signature] STL-SF	6/20/06	1805	[signature] STL-SF

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LOGIN SAMPLE RECEIPT CHECK LIST

Client: Erler & Kalinowski, Inc. Job Number: 720-4194-1

Login Number: 4194

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

ANALYTICAL REPORT

Job Number: 720-4197-1

Job Description: Presidio 937 Marine drive/Bldg. 937

For:
Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010

Attention: Mr. Adam Abeles

Afsaneh Salimpour
Project Manager I
asalimpour@stl-inc.com
06/30/2006

cc: Mr. John Dewitt
Mr. Nina Pozdnyakova

Project Manager: Afsaneh Salimpour

EXECUTIVE SUMMARY - Detections

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-4197-1	**937SB111[2]**				
Percent Moisture		21	0.10	%	PercentMoisture
720-4197-2	**937SB113[2.5]**				
Percent Moisture		15	0.10	%	PercentMoisture
720-4197-3	**937SB119[2]**				
Percent Moisture		14	0.10	%	PercentMoisture
720-4197-4	**937SB124[3.5]**				
Percent Moisture		20	0.10	%	PercentMoisture
720-4197-5	**937SB125[2]**				
Percent Moisture		17	0.10	%	PercentMoisture
720-4197-6	**937SB126[3]**				
Percent Moisture		16	0.10	%	PercentMoisture
720-4197-7	**937SB127[2]**				
Percent Moisture		24	0.10	%	PercentMoisture
720-4197-8	**937SB128[3]**				
Percent Moisture		16	0.10	%	PercentMoisture

METHOD SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Volatile Organic Compounds by GC/MS (Low Level)	STL-SF	SW846 8260B	
Closed System Purge & Trap/Laboratory	STL-SF		SW846 5035
Percent Moisture	STL-SF	EPA PercentMoisture	

LAB REFERENCES:

STL-SF = STL-San Francisco

METHOD REFERENCES:

EPA - US Environmental Protection Agency

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Method	Analyst	Analyst ID
SW846 8260B	Lee, Michael	ML
EPA PercentMoisture	Thurman, Elvira	ET

SAMPLE SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-4197-1	937SB111[2]	Solid	06/20/2006 1217	06/20/2006 1805
720-4197-2	937SB113[2.5]	Solid	06/20/2006 1455	06/20/2006 1805
720-4197-3	937SB119[2]	Solid	06/20/2006 1325	06/20/2006 1805
720-4197-4	937SB124[3.5]	Solid	06/20/2006 1020	06/20/2006 1805
720-4197-5	937SB125[2]	Solid	06/20/2006 1040	06/20/2006 1805
720-4197-6	937SB126[3]	Solid	06/20/2006 1115	06/20/2006 1805
720-4197-7	937SB127[2]	Solid	06/20/2006 1130	06/20/2006 1805
720-4197-8	937SB128[3]	Solid	06/20/2006 1154	06/20/2006 1805

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB111[2]

Lab Sample ID: 720-4197-1 Date Sampled: 06/20/2006 1217
Client Matrix: Solid % Moisture: 20.8 Date Received: 06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method: 8260B Analysis Batch: 720-10226 Instrument ID: Latest Chemstation
Preparation: 5035 Prep Batch: 720-10431 Lab File ID: 062106017.D
Dilution: 1.0 Initial Weight/Volume: 5.35 g
Date Analyzed: 06/21/2006 1903 Final Weight/Volume: 10 mL
Date Prepared: 06/21/2006 1230

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.9
Acetone		ND		59
Benzene		ND		5.9
Dichlorobromomethane		ND		5.9
Bromobenzene		ND		5.9
Chlorobromomethane		ND		24
Bromoform		ND		5.9
Bromomethane		ND		12
Methyl Ethyl Ketone		ND		59
n-Butylbenzene		ND		5.9
sec-Butylbenzene		ND		5.9
tert-Butylbenzene		ND		5.9
Carbon disulfide		ND		5.9
Carbon tetrachloride		ND		5.9
Chlorobenzene		ND		5.9
Chloroethane		ND		12
Chloroform		ND		5.9
Chloromethane		ND		12
2-Chlorotoluene		ND		5.9
4-Chlorotoluene		ND		5.9
Chlorodibromomethane		ND		5.9
1,2-Dichlorobenzene		ND		5.9
1,3-Dichlorobenzene		ND		5.9
1,4-Dichlorobenzene		ND		5.9
1,3-Dichloropropane		ND		5.9
1,1-Dichloropropene		ND		5.9
1,2-Dibromo-3-Chloropropane		ND		59
Ethylene Dibromide		ND		5.9
Dibromomethane		ND		12
Dichlorodifluoromethane		ND		12
1,1-Dichloroethane		ND		5.9
1,2-Dichloroethane		ND		5.9
1,1-Dichloroethene		ND		5.9
cis-1,2-Dichloroethene		ND		5.9
trans-1,2-Dichloroethene		ND		5.9
1,2-Dichloropropane		ND		5.9
cis-1,3-Dichloropropene		ND		5.9
trans-1,3-Dichloropropene		ND		5.9
Ethylbenzene		ND		5.9
Hexachlorobutadiene		ND		5.9
Isopropylbenzene		ND		5.9
4-Isopropyltoluene		ND		5.9
Methylene Chloride		ND		12

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB111[2]

Lab Sample ID:	720-4197-1			Date Sampled:	06/20/2006 1217
Client Matrix:	Solid	% Moisture:	20.8	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10226	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10431	Lab File ID:	062106017.D
Dilution:	1.0		Initial Weight/Volume:	5.35 g
Date Analyzed:	06/21/2006 1903		Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230			

Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone	ND		59
Naphthalene	ND		12
N-Propylbenzene	ND		5.9
Styrene	ND		5.9
1,1,1,2-Tetrachloroethane	ND		5.9
1,1,2,2-Tetrachloroethane	ND		5.9
Tetrachloroethene	ND		5.9
Toluene	ND		5.9
1,2,3-Trichlorobenzene	ND		5.9
1,2,4-Trichlorobenzene	ND		5.9
1,1,1-Trichloroethane	ND		5.9
1,1,2-Trichloroethane	ND		5.9
Trichloroethene	ND		5.9
Trichlorofluoromethane	ND		5.9
1,2,3-Trichloropropane	ND		5.9
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.9
1,2,4-Trimethylbenzene	ND		5.9
1,3,5-Trimethylbenzene	ND		5.9
Vinyl acetate	ND		59
Vinyl chloride	ND		5.9
Xylenes, Total	ND		12
2,2-Dichloropropane	ND		5.9

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	116	60 - 140
1,2-Dichloroethane-d4	139	60 - 140
Toluene-d8	105	70 - 130

Client: Erler & Kalinowski, Inc.   Job Number: 720-4197-1

Client Sample ID: 937SB113[2.5]

Lab Sample ID:	720-4197-2			Date Sampled:	06/20/2006 1455
Client Matrix:	Solid	% Moisture:	15.2	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10226	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10431	Lab File ID:	062106018.D
Dilution:	1.0		Initial Weight/Volume:	4.70 g
Date Analyzed:	06/21/2006 1930		Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		6.3
Acetone		ND		63
Benzene		ND		6.3
Dichlorobromomethane		ND		6.3
Bromobenzene		ND		6.3
Chlorobromomethane		ND		25
Bromoform		ND		6.3
Bromomethane		ND		13
Methyl Ethyl Ketone		ND		63
n-Butylbenzene		ND		6.3
sec-Butylbenzene		ND		6.3
tert-Butylbenzene		ND		6.3
Carbon disulfide		ND		6.3
Carbon tetrachloride		ND		6.3
Chlorobenzene		ND		6.3
Chloroethane		ND		13
Chloroform		ND		6.3
Chloromethane		ND		13
2-Chlorotoluene		ND		6.3
4-Chlorotoluene		ND		6.3
Chlorodibromomethane		ND		6.3
1,2-Dichlorobenzene		ND		6.3
1,3-Dichlorobenzene		ND		6.3
1,4-Dichlorobenzene		ND		6.3
1,3-Dichloropropane		ND		6.3
1,1-Dichloropropene		ND		6.3
1,2-Dibromo-3-Chloropropane		ND		63
Ethylene Dibromide		ND		6.3
Dibromomethane		ND		13
Dichlorodifluoromethane		ND		13
1,1-Dichloroethane		ND		6.3
1,2-Dichloroethane		ND		6.3
1,1-Dichloroethene		ND		6.3
cis-1,2-Dichloroethene		ND		6.3
trans-1,2-Dichloroethene		ND		6.3
1,2-Dichloropropane		ND		6.3
cis-1,3-Dichloropropene		ND		6.3
trans-1,3-Dichloropropene		ND		6.3
Ethylbenzene		ND		6.3
Hexachlorobutadiene		ND		6.3
Isopropylbenzene		ND		6.3
4-Isopropyltoluene		ND		6.3
Methylene Chloride		ND		13

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB113[2.5]

Lab Sample ID:	720-4197-2			Date Sampled:	06/20/2006 1455
Client Matrix:	Solid	% Moisture:	15.2	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10226	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10431	Lab File ID:	062106018.D
Dilution:	1.0		Initial Weight/Volume:	4.70 g
Date Analyzed:	06/21/2006 1930		Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		63
Naphthalene		ND		13
N-Propylbenzene		ND		6.3
Styrene		ND		6.3
1,1,1,2-Tetrachloroethane		ND		6.3
1,1,2,2-Tetrachloroethane		ND		6.3
Tetrachloroethene		ND		6.3
Toluene		ND		6.3
1,2,3-Trichlorobenzene		ND		6.3
1,2,4-Trichlorobenzene		ND		6.3
1,1,1-Trichloroethane		ND		6.3
1,1,2-Trichloroethane		ND		6.3
Trichloroethene		ND		6.3
Trichlorofluoromethane		ND		6.3
1,2,3-Trichloropropane		ND		6.3
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		6.3
1,2,4-Trimethylbenzene		ND		6.3
1,3,5-Trimethylbenzene		ND		6.3
Vinyl acetate		ND		63
Vinyl chloride		ND		6.3
Xylenes, Total		ND		13
2,2-Dichloropropane		ND		6.3

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	124	60 - 140
1,2-Dichloroethane-d4	138	60 - 140
Toluene-d8	108	70 - 130

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB119[2]

Lab Sample ID:	720-4197-3			Date Sampled:	06/20/2006 1325
Client Matrix:	Solid	% Moisture:	14.1	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10401	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10454	Lab File ID:	062606010.D
Dilution:	1.0		Initial Weight/Volume:	5.39 g
Date Analyzed:	06/26/2006 1709		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.4
Acetone		ND		54
Benzene		ND		5.4
Dichlorobromomethane		ND		5.4
Bromobenzene		ND		5.4
Chlorobromomethane		ND		22
Bromoform		ND		5.4
Bromomethane		ND		11
Methyl Ethyl Ketone		ND		54
n-Butylbenzene		ND		5.4
sec-Butylbenzene		ND		5.4
tert-Butylbenzene		ND		5.4
Carbon disulfide		ND		5.4
Carbon tetrachloride		ND		5.4
Chlorobenzene		ND		5.4
Chloroethane		ND		11
Chloroform		ND		5.4
Chloromethane		ND		11
2-Chlorotoluene		ND		5.4
4-Chlorotoluene		ND		5.4
Chlorodibromomethane		ND		5.4
1,2-Dichlorobenzene		ND		5.4
1,3-Dichlorobenzene		ND		5.4
1,4-Dichlorobenzene		ND		5.4
1,3-Dichloropropane		ND		5.4
1,1-Dichloropropene		ND		5.4
1,2-Dibromo-3-Chloropropane		ND		54
Ethylene Dibromide		ND		5.4
Dibromomethane		ND		11
Dichlorodifluoromethane		ND		11
1,1-Dichloroethane		ND		5.4
1,2-Dichloroethane		ND		5.4
1,1-Dichloroethene		ND		5.4
cis-1,2-Dichloroethene		ND		5.4
trans-1,2-Dichloroethene		ND		5.4
1,2-Dichloropropane		ND		5.4
cis-1,3-Dichloropropene		ND		5.4
trans-1,3-Dichloropropene		ND		5.4
Ethylbenzene		ND		5.4
Hexachlorobutadiene		ND		5.4
Isopropylbenzene		ND		5.4
4-Isopropyltoluene		ND		5.4
Methylene Chloride		ND		11

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB119[2]

Lab Sample ID:	720-4197-3			Date Sampled:	06/20/2006 1325
Client Matrix:	Solid	% Moisture:	14.1	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10401	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10454	Lab File ID:	062606010.D
Dilution:	1.0		Initial Weight/Volume:	5.39 g
Date Analyzed:	06/26/2006 1709		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		54
Naphthalene		ND		11
N-Propylbenzene		ND		5.4
Styrene		ND		5.4
1,1,1,2-Tetrachloroethane		ND		5.4
1,1,2,2-Tetrachloroethane		ND		5.4
Tetrachloroethene		ND		5.4
Toluene		ND		5.4
1,2,3-Trichlorobenzene		ND		5.4
1,2,4-Trichlorobenzene		ND		5.4
1,1,1-Trichloroethane		ND		5.4
1,1,2-Trichloroethane		ND		5.4
Trichloroethene		ND		5.4
Trichlorofluoromethane		ND		5.4
1,2,3-Trichloropropane		ND		5.4
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.4
1,2,4-Trimethylbenzene		ND		5.4
1,3,5-Trimethylbenzene		ND		5.4
Vinyl acetate		ND		54
Vinyl chloride		ND		5.4
Xylenes, Total		ND		11
2,2-Dichloropropane		ND		5.4

Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	141	X	60 - 140
1,2-Dichloroethane-d4	128		60 - 140
Toluene-d8	113		70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB124[3.5]

Lab Sample ID:	720-4197-4			Date Sampled:	06/20/2006 1020
Client Matrix:	Solid	% Moisture:	19.7	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10401	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10454	Lab File ID:	062606011.D
Dilution:	1.0		Initial Weight/Volume:	5.37 g
Date Analyzed:	06/26/2006 1736		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.8
Acetone		ND		58
Benzene		ND		5.8
Dichlorobromomethane		ND		5.8
Bromobenzene		ND		5.8
Chlorobromomethane		ND		23
Bromoform		ND		5.8
Bromomethane		ND		12
Methyl Ethyl Ketone		ND		58
n-Butylbenzene		ND		5.8
sec-Butylbenzene		ND		5.8
tert-Butylbenzene		ND		5.8
Carbon disulfide		ND		5.8
Carbon tetrachloride		ND		5.8
Chlorobenzene		ND		5.8
Chloroethane		ND		12
Chloroform		ND		5.8
Chloromethane		ND		12
2-Chlorotoluene		ND		5.8
4-Chlorotoluene		ND		5.8
Chlorodibromomethane		ND		5.8
1,2-Dichlorobenzene		ND		5.8
1,3-Dichlorobenzene		ND		5.8
1,4-Dichlorobenzene		ND		5.8
1,3-Dichloropropane		ND		5.8
1,1-Dichloropropene		ND		5.8
1,2-Dibromo-3-Chloropropane		ND		58
Ethylene Dibromide		ND		5.8
Dibromomethane		ND		12
Dichlorodifluoromethane		ND		12
1,1-Dichloroethane		ND		5.8
1,2-Dichloroethane		ND		5.8
1,1-Dichloroethene		ND		5.8
cis-1,2-Dichloroethene		ND		5.8
trans-1,2-Dichloroethene		ND		5.8
1,2-Dichloropropane		ND		5.8
cis-1,3-Dichloropropene		ND		5.8
trans-1,3-Dichloropropene		ND		5.8
Ethylbenzene		ND		5.8
Hexachlorobutadiene		ND		5.8
Isopropylbenzene		ND		5.8
4-Isopropyltoluene		ND		5.8
Methylene Chloride		ND		12

Analytical Data

Client: Erler & Kalinowski, Inc. | Job Number: 720-4197-1

Client Sample ID: 937SB124[3.5]

Lab Sample ID:	720-4197-4			Date Sampled:	06/20/2006 1020
Client Matrix:	Solid	% Moisture:	19.7	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10401	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10454	Lab File ID:	062606011.D
Dilution:	1.0		Initial Weight/Volume:	5.37 g
Date Analyzed:	06/26/2006 1736		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		58
Naphthalene		ND		12
N-Propylbenzene		ND		5.8
Styrene		ND		5.8
1,1,1,2-Tetrachloroethane		ND		5.8
1,1,2,2-Tetrachloroethane		ND		5.8
Tetrachloroethene		ND		5.8
Toluene		ND		5.8
1,2,3-Trichlorobenzene		ND		5.8
1,2,4-Trichlorobenzene		ND		5.8
1,1,1-Trichloroethane		ND		5.8
1,1,2-Trichloroethane		ND		5.8
Trichloroethene		ND		5.8
Trichlorofluoromethane		ND		5.8
1,2,3-Trichloropropane		ND		5.8
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.8
1,2,4-Trimethylbenzene		ND		5.8
1,3,5-Trimethylbenzene		ND		5.8
Vinyl acetate		ND		58
Vinyl chloride		ND		5.8
Xylenes, Total		ND		12
2,2-Dichloropropane		ND		5.8

Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	148	X	60 - 140
1,2-Dichloroethane-d4	138		60 - 140
Toluene-d8	115		70 - 130

Client: Erler & Kalinowski, Inc. | Job Number: 720-4197-1

Client Sample ID: 937SB125[2]

Lab Sample ID:	720-4197-5			Date Sampled:	06/20/2006 1040
Client Matrix:	Solid	% Moisture:	17.4	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10226	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10431	Lab File ID:	062106021.D
Dilution:	1.0		Initial Weight/Volume:	5.73 g
Date Analyzed:	06/21/2006 2051		Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.3
Acetone		ND		53
Benzene		ND		5.3
Dichlorobromomethane		ND		5.3
Bromobenzene		ND		5.3
Chlorobromomethane		ND		21
Bromoform		ND		5.3
Bromomethane		ND		11
Methyl Ethyl Ketone		ND		53
n-Butylbenzene		ND		5.3
sec-Butylbenzene		ND		5.3
tert-Butylbenzene		ND		5.3
Carbon disulfide		ND		5.3
Carbon tetrachloride		ND		5.3
Chlorobenzene		ND		5.3
Chloroethane		ND		11
Chloroform		ND		5.3
Chloromethane		ND		11
2-Chlorotoluene		ND		5.3
4-Chlorotoluene		ND		5.3
Chlorodibromomethane		ND		5.3
1,2-Dichlorobenzene		ND		5.3
1,3-Dichlorobenzene		ND		5.3
1,4-Dichlorobenzene		ND		5.3
1,3-Dichloropropane		ND		5.3
1,1-Dichloropropene		ND		5.3
1,2-Dibromo-3-Chloropropane		ND		53
Ethylene Dibromide		ND		5.3
Dibromomethane		ND		11
Dichlorodifluoromethane		ND		11
1,1-Dichloroethane		ND		5.3
1,2-Dichloroethane		ND		5.3
1,1-Dichloroethene		ND		5.3
cis-1,2-Dichloroethene		ND		5.3
trans-1,2-Dichloroethene		ND		5.3
1,2-Dichloropropane		ND		5.3
cis-1,3-Dichloropropene		ND		5.3
trans-1,3-Dichloropropene		ND		5.3
Ethylbenzene		ND		5.3
Hexachlorobutadiene		ND		5.3
Isopropylbenzene		ND		5.3
4-Isopropyltoluene		ND		5.3
Methylene Chloride		ND		11

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB125[2]

Lab Sample ID:	720-4197-5			Date Sampled:	06/20/2006 1040
Client Matrix:	Solid	% Moisture:	17.4	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10226	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10431	Lab File ID:	062106021.D
Dilution:	1.0		Initial Weight/Volume:	5.73 g
Date Analyzed:	06/21/2006 2051		Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		53
Naphthalene		ND		11
N-Propylbenzene		ND		5.3
Styrene		ND		5.3
1,1,1,2-Tetrachloroethane		ND		5.3
1,1,2,2-Tetrachloroethane		ND		5.3
Tetrachloroethene		ND		5.3
Toluene		ND		5.3
1,2,3-Trichlorobenzene		ND		5.3
1,2,4-Trichlorobenzene		ND		5.3
1,1,1-Trichloroethane		ND		5.3
1,1,2-Trichloroethane		ND		5.3
Trichloroethene		ND		5.3
Trichlorofluoromethane		ND		5.3
1,2,3-Trichloropropane		ND		5.3
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.3
1,2,4-Trimethylbenzene		ND		5.3
1,3,5-Trimethylbenzene		ND		5.3
Vinyl acetate		ND		53
Vinyl chloride		ND		5.3
Xylenes, Total		ND		11
2,2-Dichloropropane		ND		5.3

Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	112		60 - 140
1,2-Dichloroethane-d4	141	X	60 - 140
Toluene-d8	108		70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB126[3]

Lab Sample ID:	720-4197-6			Date Sampled:	06/20/2006 1115
Client Matrix:	Solid	% Moisture:	15.7	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10226	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10431	Lab File ID:	062106022.D
Dilution:	1.0		Initial Weight/Volume:	5.32 g
Date Analyzed:	06/21/2006 2118		Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.6
Acetone		ND		56
Benzene		ND		5.6
Dichlorobromomethane		ND		5.6
Bromobenzene		ND		5.6
Chlorobromomethane		ND		22
Bromoform		ND		5.6
Bromomethane		ND		11
Methyl Ethyl Ketone		ND		56
n-Butylbenzene		ND		5.6
sec-Butylbenzene		ND		5.6
tert-Butylbenzene		ND		5.6
Carbon disulfide		ND		5.6
Carbon tetrachloride		ND		5.6
Chlorobenzene		ND		5.6
Chloroethane		ND		11
Chloroform		ND		5.6
Chloromethane		ND		11
2-Chlorotoluene		ND		5.6
4-Chlorotoluene		ND		5.6
Chlorodibromomethane		ND		5.6
1,2-Dichlorobenzene		ND		5.6
1,3-Dichlorobenzene		ND		5.6
1,4-Dichlorobenzene		ND		5.6
1,3-Dichloropropane		ND		5.6
1,1-Dichloropropene		ND		5.6
1,2-Dibromo-3-Chloropropane		ND		56
Ethylene Dibromide		ND		5.6
Dibromomethane		ND		11
Dichlorodifluoromethane		ND		11
1,1-Dichloroethane		ND		5.6
1,2-Dichloroethane		ND		5.6
1,1-Dichloroethene		ND		5.6
cis-1,2-Dichloroethene		ND		5.6
trans-1,2-Dichloroethene		ND		5.6
1,2-Dichloropropane		ND		5.6
cis-1,3-Dichloropropene		ND		5.6
trans-1,3-Dichloropropene		ND		5.6
Ethylbenzene		ND		5.6
Hexachlorobutadiene		ND		5.6
Isopropylbenzene		ND		5.6
4-Isopropyltoluene		ND		5.6
Methylene Chloride		ND		11

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB126[3]

Lab Sample ID:	720-4197-6			Date Sampled:	06/20/2006 1115
Client Matrix:	Solid	% Moisture:	15.7	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10226	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10431	Lab File ID:	062106022.D
Dilution:	1.0		Initial Weight/Volume:	5.32 g
Date Analyzed:	06/21/2006 2118		Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		56
Naphthalene		ND		11
N-Propylbenzene		ND		5.6
Styrene		ND		5.6
1,1,1,2-Tetrachloroethane		ND		5.6
1,1,2,2-Tetrachloroethane		ND		5.6
Tetrachloroethene		ND		5.6
Toluene		ND		5.6
1,2,3-Trichlorobenzene		ND		5.6
1,2,4-Trichlorobenzene		ND		5.6
1,1,1-Trichloroethane		ND		5.6
1,1,2-Trichloroethane		ND		5.6
Trichloroethene		ND		5.6
Trichlorofluoromethane		ND		5.6
1,2,3-Trichloropropane		ND		5.6
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.6
1,2,4-Trimethylbenzene		ND		5.6
1,3,5-Trimethylbenzene		ND		5.6
Vinyl acetate		ND		56
Vinyl chloride		ND		5.6
Xylenes, Total		ND		11
2,2-Dichloropropane		ND		5.6

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	114	60 - 140
1,2-Dichloroethane-d4	140	60 - 140
Toluene-d8	111	70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB127[2]

Lab Sample ID:	720-4197-7			Date Sampled:	06/20/2006 1130
Client Matrix:	Solid	% Moisture:	23.6	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10401	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10454	Lab File ID:	062606012.D
Dilution:	1.0		Initial Weight/Volume:	5.00 g
Date Analyzed:	06/26/2006 1803		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		6.5
Acetone		ND		65
Benzene		ND		6.5
Dichlorobromomethane		ND		6.5
Bromobenzene		ND		6.5
Chlorobromomethane		ND		26
Bromoform		ND		6.5
Bromomethane		ND		13
Methyl Ethyl Ketone		ND		65
n-Butylbenzene		ND		6.5
sec-Butylbenzene		ND		6.5
tert-Butylbenzene		ND		6.5
Carbon disulfide		ND		6.5
Carbon tetrachloride		ND		6.5
Chlorobenzene		ND		6.5
Chloroethane		ND		13
Chloroform		ND		6.5
Chloromethane		ND		13
2-Chlorotoluene		ND		6.5
4-Chlorotoluene		ND		6.5
Chlorodibromomethane		ND		6.5
1,2-Dichlorobenzene		ND		6.5
1,3-Dichlorobenzene		ND		6.5
1,4-Dichlorobenzene		ND		6.5
1,3-Dichloropropane		ND		6.5
1,1-Dichloropropene		ND		6.5
1,2-Dibromo-3-Chloropropane		ND		65
Ethylene Dibromide		ND		6.5
Dibromomethane		ND		13
Dichlorodifluoromethane		ND		13
1,1-Dichloroethane		ND		6.5
1,2-Dichloroethane		ND		6.5
1,1-Dichloroethene		ND		6.5
cis-1,2-Dichloroethene		ND		6.5
trans-1,2-Dichloroethene		ND		6.5
1,2-Dichloropropane		ND		6.5
cis-1,3-Dichloropropene		ND		6.5
trans-1,3-Dichloropropene		ND		6.5
Ethylbenzene		ND		6.5
Hexachlorobutadiene		ND		6.5
Isopropylbenzene		ND		6.5
4-Isopropyltoluene		ND		6.5
Methylene Chloride		ND		13

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB127[2]

Lab Sample ID:	720-4197-7			Date Sampled:	06/20/2006 1130
Client Matrix:	Solid	% Moisture:	23.6	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10401	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10454	Lab File ID:	062606012.D
Dilution:	1.0		Initial Weight/Volume:	5.00 g
Date Analyzed:	06/26/2006 1803		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		65
Naphthalene		ND		13
N-Propylbenzene		ND		6.5
Styrene		ND		6.5
1,1,1,2-Tetrachloroethane		ND		6.5
1,1,2,2-Tetrachloroethane		ND		6.5
Tetrachloroethene		ND		6.5
Toluene		ND		6.5
1,2,3-Trichlorobenzene		ND		6.5
1,2,4-Trichlorobenzene		ND		6.5
1,1,1-Trichloroethane		ND		6.5
1,1,2-Trichloroethane		ND		6.5
Trichloroethene		ND		6.5
Trichlorofluoromethane		ND		6.5
1,2,3-Trichloropropane		ND		6.5
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		6.5
1,2,4-Trimethylbenzene		ND		6.5
1,3,5-Trimethylbenzene		ND		6.5
Vinyl acetate		ND		65
Vinyl chloride		ND		6.5
Xylenes, Total		ND		13
2,2-Dichloropropane		ND		6.5

Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	142	X	60 - 140
1,2-Dichloroethane-d4	144	X	60 - 140
Toluene-d8	111		70 - 130

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB128[3]

Lab Sample ID:	720-4197-8			Date Sampled:	06/20/2006 1154
Client Matrix:	Solid	% Moisture:	16.2	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10401	Instrument ID: Latest Chemstation
Preparation:	5035	Prep Batch: 720-10454	Lab File ID: 062606013.D
Dilution:	1.0		Initial Weight/Volume: 5.49 g
Date Analyzed:	06/26/2006 1830		Final Weight/Volume: 10 mL
Date Prepared:	06/26/2006 1450		

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.4
Acetone		ND		54
Benzene		ND		5.4
Dichlorobromomethane		ND		5.4
Bromobenzene		ND		5.4
Chlorobromomethane		ND		22
Bromoform		ND		5.4
Bromomethane		ND		11
Methyl Ethyl Ketone		ND		54
n-Butylbenzene		ND		5.4
sec-Butylbenzene		ND		5.4
tert-Butylbenzene		ND		5.4
Carbon disulfide		ND		5.4
Carbon tetrachloride		ND		5.4
Chlorobenzene		ND		5.4
Chloroethane		ND		11
Chloroform		ND		5.4
Chloromethane		ND		11
2-Chlorotoluene		ND		5.4
4-Chlorotoluene		ND		5.4
Chlorodibromomethane		ND		5.4
1,2-Dichlorobenzene		ND		5.4
1,3-Dichlorobenzene		ND		5.4
1,4-Dichlorobenzene		ND		5.4
1,3-Dichloropropane		ND		5.4
1,1-Dichloropropene		ND		5.4
1,2-Dibromo-3-Chloropropane		ND		54
Ethylene Dibromide		ND		5.4
Dibromomethane		ND		11
Dichlorodifluoromethane		ND		11
1,1-Dichloroethane		ND		5.4
1,2-Dichloroethane		ND		5.4
1,1-Dichloroethene		ND		5.4
cis-1,2-Dichloroethene		ND		5.4
trans-1,2-Dichloroethene		ND		5.4
1,2-Dichloropropane		ND		5.4
cis-1,3-Dichloropropene		ND		5.4
trans-1,3-Dichloropropene		ND		5.4
Ethylbenzene		ND		5.4
Hexachlorobutadiene		ND		5.4
Isopropylbenzene		ND		5.4
4-Isopropyltoluene		ND		5.4
Methylene Chloride		ND		11

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Client Sample ID: 937SB128[3]

Lab Sample ID:	720-4197-8			Date Sampled:	06/20/2006 1154
Client Matrix:	Solid	% Moisture:	16.2	Date Received:	06/20/2006 1805

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10401	Instrument ID:	Latest Chemstation
Preparation:	5035	Prep Batch: 720-10454	Lab File ID:	062606013.D
Dilution:	1.0		Initial Weight/Volume:	5.49 g
Date Analyzed:	06/26/2006 1830		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		54
Naphthalene		ND		11
N-Propylbenzene		ND		5.4
Styrene		ND		5.4
1,1,1,2-Tetrachloroethane		ND		5.4
1,1,2,2-Tetrachloroethane		ND		5.4
Tetrachloroethene		ND		5.4
Toluene		ND		5.4
1,2,3-Trichlorobenzene		ND		5.4
1,2,4-Trichlorobenzene		ND		5.4
1,1,1-Trichloroethane		ND		5.4
1,1,2-Trichloroethane		ND		5.4
Trichloroethene		ND		5.4
Trichlorofluoromethane		ND		5.4
1,2,3-Trichloropropane		ND		5.4
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.4
1,2,4-Trimethylbenzene		ND		5.4
1,3,5-Trimethylbenzene		ND		5.4
Vinyl acetate		ND		54
Vinyl chloride		ND		5.4
Xylenes, Total		ND		11
2,2-Dichloropropane		ND		5.4

Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	146	X	60 - 140
1,2-Dichloroethane-d4	134		60 - 140
Toluene-d8	104		70 - 130

General Chemistry

Client Sample ID: 937SB111[2]

Lab Sample ID: 720-4197-1 Date Sampled: 06/20/2006 1217
Client Matrix: Solid Date Received: 06/20/2006 1805

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	21		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313			

Client Sample ID: 937SB113[2.5]

Lab Sample ID: 720-4197-2 Date Sampled: 06/20/2006 1455
Client Matrix: Solid Date Received: 06/20/2006 1805

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	15		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313			

Client Sample ID: 937SB119[2]

Lab Sample ID: 720-4197-3 Date Sampled: 06/20/2006 1325
Client Matrix: Solid Date Received: 06/20/2006 1805

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	14		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313			

Client Sample ID: 937SB124[3.5]

Lab Sample ID: 720-4197-4 Date Sampled: 06/20/2006 1020
Client Matrix: Solid Date Received: 06/20/2006 1805

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	20		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313			

General Chemistry

Client Sample ID: 937SB125[2]

Lab Sample ID: 720-4197-5 Date Sampled: 06/20/2006 1040
Client Matrix: Solid Date Received: 06/20/2006 1805

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	17		%	0.10	1.0	PercentMoisture

Anly Batch: 720-10281 Date Analyzed 06/23/2006 1313

Client Sample ID: 937SB126[3]

Lab Sample ID: 720-4197-6 Date Sampled: 06/20/2006 1115
Client Matrix: Solid Date Received: 06/20/2006 1805

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	16		%	0.10	1.0	PercentMoisture

Anly Batch: 720-10281 Date Analyzed 06/23/2006 1313

Client Sample ID: 937SB127[2]

Lab Sample ID: 720-4197-7 Date Sampled: 06/20/2006 1130
Client Matrix: Solid Date Received: 06/20/2006 1805

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	24		%	0.10	1.0	PercentMoisture

Anly Batch: 720-10281 Date Analyzed 06/23/2006 1313

Client Sample ID: 937SB128[3]

Lab Sample ID: 720-4197-8 Date Sampled: 06/20/2006 1154
Client Matrix: Solid Date Received: 06/20/2006 1805

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	16		%	0.10	1.0	PercentMoisture

Anly Batch: 720-10281 Date Analyzed 06/23/2006 1313

DATA REPORTING QUALIFIERS

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Lab Section	Qualifier	Description
GC/MS VOA		
	X	Surrogate exceeds the control limits

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
GC/MS VOA				
Prep Batch: 720-10431				
LCS 720-10431/1-A	Lab Control Spike	Solid	5035	
LCSD 720-10431/2-A	Lab Control Spike Duplicate	Solid	5035	
MB 720-10431/3-A	Method Blank	Solid	5035	
720-4197-1	937SB111[2]	Solid	5035	
720-4197-2	937SB113[2.5]	Solid	5035	
720-4197-5	937SB125[2]	Solid	5035	
720-4197-6	937SB126[3]	Solid	5035	
Prep Batch: 720-10454				
LCS 720-10454/1-A	Lab Control Spike	Solid	5035	
LCSD 720-10454/2-A	Lab Control Spike Duplicate	Solid	5035	
MB 720-10454/3-A	Method Blank	Solid	5035	
720-4197-3	937SB119[2]	Solid	5035	
720-4197-4	937SB124[3.5]	Solid	5035	
720-4197-7	937SB127[2]	Solid	5035	
720-4197-8	937SB128[3]	Solid	5035	
Analysis Batch:720-10226				
LCS 720-10431/1-A	Lab Control Spike	Solid	8260B	720-10431
LCSD 720-10431/2-A	Lab Control Spike Duplicate	Solid	8260B	720-10431
MB 720-10431/3-A	Method Blank	Solid	8260B	720-10431
720-4197-1	937SB111[2]	Solid	8260B	720-10431
720-4197-2	937SB113[2.5]	Solid	8260B	720-10431
720-4197-5	937SB125[2]	Solid	8260B	720-10431
720-4197-6	937SB126[3]	Solid	8260B	720-10431
Analysis Batch:720-10401				
LCS 720-10454/1-A	Lab Control Spike	Solid	8260B	720-10454
LCSD 720-10454/2-A	Lab Control Spike Duplicate	Solid	8260B	720-10454
MB 720-10454/3-A	Method Blank	Solid	8260B	720-10454
720-4197-3	937SB119[2]	Solid	8260B	720-10454
720-4197-4	937SB124[3.5]	Solid	8260B	720-10454
720-4197-7	937SB127[2]	Solid	8260B	720-10454
720-4197-8	937SB128[3]	Solid	8260B	720-10454

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
General Chemistry				
Analysis Batch:720-10281				
MB 720-10281/1	Method Blank	Solid	PercentMoisture	
720-4197-1	937SB111[2]	Solid	PercentMoisture	
720-4197-2	937SB113[2.5]	Solid	PercentMoisture	
720-4197-3	937SB119[2]	Solid	PercentMoisture	
720-4197-4	937SB124[3.5]	Solid	PercentMoisture	
720-4197-5	937SB125[2]	Solid	PercentMoisture	
720-4197-6	937SB126[3]	Solid	PercentMoisture	
720-4197-7	937SB127[2]	Solid	PercentMoisture	
720-4197-8	937SB128[3]	Solid	PercentMoisture	
720-4215-A-9 DU	Duplicate	Solid	PercentMoisture	

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Method Blank - Batch: 720-10431

Method: 8260B
Preparation: 5035

Lab Sample ID:	MB 720-10431/3-A	Analysis Batch:	720-10226	Instrument ID:	Latest Chemstation
Client Matrix:	Solid	Prep Batch:	720-10431	Lab File ID:	062106008.D
Dilution:	1.0	Units:	ug/Kg	Initial Weight/Volume:	5 g
Date Analyzed:	06/21/2006 1400			Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230				

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		5.0
Dichlorobromomethane	ND		5.0
Bromobenzene	ND		5.0
Chlorobromomethane	ND		20
Bromoform	ND		5.0
Bromomethane	ND		10
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		5.0
sec-Butylbenzene	ND		5.0
tert-Butylbenzene	ND		5.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		5.0
Chlorobenzene	ND		5.0
Chloroethane	ND		10
Chloroform	ND		5.0
Chloromethane	ND		10
2-Chlorotoluene	ND		5.0
4-Chlorotoluene	ND		5.0
Chlorodibromomethane	ND		5.0
1,2-Dichlorobenzene	ND		5.0
1,3-Dichlorobenzene	ND		5.0
1,4-Dichlorobenzene	ND		5.0
1,3-Dichloropropane	ND		5.0
1,1-Dichloropropene	ND		5.0
1,2-Dibromo-3-Chloropropane	ND		50
Ethylene Dibromide	ND		5.0
Dibromomethane	ND		10
Dichlorodifluoromethane	ND		10
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethane	ND		5.0
1,1-Dichloroethene	ND		5.0
cis-1,2-Dichloroethene	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
trans-1,3-Dichloropropene	ND		5.0
Ethylbenzene	ND		5.0
Hexachlorobutadiene	ND		5.0
Isopropylbenzene	ND		5.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Method Blank - Batch: 720-10431

Method: 8260B
Preparation: 5035

Lab Sample ID: MB 720-10431/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/21/2006 1400
Date Prepared: 06/21/2006 1230

Analysis Batch: 720-10226
Prep Batch: 720-10431
Units: ug/Kg

Instrument ID: Latest Chemstation
Lab File ID: 062106008.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
4-Isopropyltoluene	ND		5.0
Methylene Chloride	ND		10
methyl isobutyl ketone	ND		50
Naphthalene	ND		10
N-Propylbenzene	ND		5.0
Styrene	ND		5.0
1,1,1,2-Tetrachloroethane	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Tetrachloroethene	ND		5.0
Toluene	ND		5.0
1,2,3-Trichlorobenzene	ND		5.0
1,2,4-Trichlorobenzene	ND		5.0
1,1,1-Trichloroethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Trichloroethene	ND		5.0
Trichlorofluoromethane	ND		5.0
1,2,3-Trichloropropane	ND		5.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0
1,2,4-Trimethylbenzene	ND		5.0
1,3,5-Trimethylbenzene	ND		5.0
Vinyl acetate	ND		50
Vinyl chloride	ND		5.0
Xylenes, Total	ND		10
2,2-Dichloropropane	ND		5.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	123	60 - 140
1,2-Dichloroethane-d4	106	60 - 140
Toluene-d8	102	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-10431

Method: 8260B
Preparation: 5035

LCS Lab Sample ID:	LCS 720-10431/1-A	Analysis Batch:	720-10226	Instrument ID:	Latest Chemstation
Client Matrix:	Solid	Prep Batch:	720-10431	Lab File ID:	062106006.D
Dilution:	1.0	Units:	ug/Kg	Initial Weight/Volume:	5 g
Date Analyzed:	06/21/2006 1306			Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230				

LCSD Lab Sample ID:	LCSD 720-10431/2-A	Analysis Batch:	720-10226	Instrument ID:	Latest Chemstation
Client Matrix:	Solid	Prep Batch:	720-10431	Lab File ID:	062106009.D
Dilution:	1.0	Units:	ug/Kg	Initial Weight/Volume:	5 g
Date Analyzed:	06/21/2006 1521			Final Weight/Volume:	10 mL
Date Prepared:	06/21/2006 1230				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	84	85	69 - 129	2	20		
Chlorobenzene	85	87	61 - 121	2	20		
1,1-Dichloroethene	72	76	65 - 125	5	20		
Toluene	81	81	70 - 130	0	20		
Trichloroethene	79	80	74 - 134	1	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	114	132	60 - 140
1,2-Dichloroethane-d4	97	102	60 - 140
Toluene-d8	84	91	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc.　　　　Job Number: 720-4197-1

Method Blank - Batch: 720-10454

Method: 8260B
Preparation: 5035

Lab Sample ID: MB 720-10454/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/26/2006 1620
Date Prepared: 06/26/2006 1450

Analysis Batch: 720-10401
Prep Batch: 720-10454
Units: ug/Kg

Instrument ID: Latest Chemstation
Lab File ID: 062606009.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		5.0
Dichlorobromomethane	ND		5.0
Bromobenzene	ND		5.0
Chlorobromomethane	ND		20
Bromoform	ND		5.0
Bromomethane	ND		10
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		5.0
sec-Butylbenzene	ND		5.0
tert-Butylbenzene	ND		5.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		5.0
Chlorobenzene	ND		5.0
Chloroethane	ND		10
Chloroform	ND		5.0
Chloromethane	ND		10
2-Chlorotoluene	ND		5.0
4-Chlorotoluene	ND		5.0
Chlorodibromomethane	ND		5.0
1,2-Dichlorobenzene	ND		5.0
1,3-Dichlorobenzene	ND		5.0
1,4-Dichlorobenzene	ND		5.0
1,3-Dichloropropane	ND		5.0
1,1-Dichloropropene	ND		5.0
1,2-Dibromo-3-Chloropropane	ND		50
Ethylene Dibromide	ND		5.0
Dibromomethane	ND		10
Dichlorodifluoromethane	ND		10
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethane	ND		5.0
1,1-Dichloroethene	ND		5.0
cis-1,2-Dichloroethene	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
trans-1,3-Dichloropropene	ND		5.0
Ethylbenzene	ND		5.0
Hexachlorobutadiene	ND		5.0
Isopropylbenzene	ND		5.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Method Blank - Batch: 720-10454

Method: 8260B
Preparation: 5035

Lab Sample ID: MB 720-10454/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/26/2006 1620
Date Prepared: 06/26/2006 1450

Analysis Batch: 720-10401
Prep Batch: 720-10454
Units: ug/Kg

Instrument ID: Latest Chemstation
Lab File ID: 062606009.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
4-Isopropyltoluene	ND		5.0
Methylene Chloride	ND		10
methyl isobutyl ketone	ND		50
Naphthalene	ND		10
N-Propylbenzene	ND		5.0
Styrene	ND		5.0
1,1,1,2-Tetrachloroethane	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Tetrachloroethene	ND		5.0
Toluene	ND		5.0
1,2,3-Trichlorobenzene	ND		5.0
1,2,4-Trichlorobenzene	ND		5.0
1,1,1-Trichloroethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Trichloroethene	ND		5.0
Trichlorofluoromethane	ND		5.0
1,2,3-Trichloropropane	ND		5.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0
1,2,4-Trimethylbenzene	ND		5.0
1,3,5-Trimethylbenzene	ND		5.0
Vinyl acetate	ND		50
Vinyl chloride	ND		5.0
Xylenes, Total	ND		10
2,2-Dichloropropane	ND		5.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	131	60 - 140
1,2-Dichloroethane-d4	112	60 - 140
Toluene-d8	115	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc.　　Job Number: 720-4197-1

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-10454

Method: 8260B
Preparation: 5035

LCS Lab Sample ID:	LCS 720-10454/1-A	Analysis Batch:	720-10401	Instrument ID:	Latest Chemstation
Client Matrix:	Solid	Prep Batch:	720-10454	Lab File ID:	062606007.D
Dilution:	1.0	Units:	ug/Kg	Initial Weight/Volume:	5 g
Date Analyzed:	06/26/2006 1526			Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450				

LCSD Lab Sample ID:	LCSD 720-10454/2-A	Analysis Batch:	720-10401	Instrument ID:	Latest Chemstation
Client Matrix:	Solid	Prep Batch:	720-10454	Lab File ID:	062606008.D
Dilution:	1.0	Units:	ug/Kg	Initial Weight/Volume:	5 g
Date Analyzed:	06/26/2006 1553			Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1450				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	98	98	69 - 129	0	20		
Chlorobenzene	100	105	61 - 121	4	20		
1,1-Dichloroethene	97	92	65 - 125	5	20		
Toluene	97	101	70 - 130	3	20		
Trichloroethene	102	101	74 - 134	1	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	112	118	60 - 140
1,2-Dichloroethane-d4	107	103	60 - 140
Toluene-d8	99	101	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. | Job Number: 720-4197-1

Method Blank - Batch: 720-10281

Method: PercentMoisture
Preparation: N/A

Lab Sample ID: MB 720-10281/1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/23/2006 1313
Date Prepared: N/A

Analysis Batch: 720-10281
Prep Batch: N/A
Units: %

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume:

Analyte	Result	Qual	RL
Percent Moisture	ND		0.10

Matrix Duplicate - Batch: 720-10281

Method: PercentMoisture
Preparation: N/A

Lab Sample ID: 720-4215-A-9 DU
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/23/2006 1313
Date Prepared: N/A

Analysis Batch: 720-10281
Prep Batch: N/A
Units: %

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume:

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	6.1	6.5			

Calculations are performed before rounding to avoid round-off errors in calculated results.

720-4197

100472

Erler & Kalinowski, Inc.
CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 2

1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

EKI COC No.: 2
Revision: ______ (A, B, C, D, etc.)

Project Name: Presidio
Location: Building 937
Reporting: (circle all that apply)
Hard Copy Format: PDF
Electronic Format: EDF (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III/IV (See Remarks)
Report results to (email or fax no.):
(1) mkking@ekiconsult.com (Michelle King)
(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

Project No.: A000003.08
Sampled By: Z. Maliga
Laboratory: (Address/Phone No./Contact Person)
Attn: Dimple Sharma
STL San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919
Fax: 925-484-1096

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	VOCs (EPA 8260B)	Title 22 Metals (EPA 6020)	TPH-D (EPA 8015M)	TPH-G (EPA 8015M)	% Moisture				EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937SB111[2]		6/20/06	12:17	Soil	3 encores	X										STD	Level IV (4)
"			"		1 jar					X							Level IV (4)
937SB113[2.5]			14:55		3 encores	X											Level III (3)
"			"		1 liner					X							"
937SB119[2]			13:25		3 encores	X											"
"			"		1 jar					X							"
937SB124[3.5]			10:20		3 encores	X											"
"			"		1 jar					X							"
937SB125[2]			10:40		3 encores	X											"
"			"		1 jar					X							"

Special Instructions/Notes:

Temp-2°C

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Z. Maliga	6/20/06	16:00	[signature]
[signature] STL-SF	6/20/06	1805	[signature] / STL-SF

720-4197

6/20 1004~~1004~~72

Erler & Kalinowski, Inc. **CHAIN OF CUSTODY RECORD** PAGE 2 OF 2

CONSULTING ENGINEERS AND SCIENTISTS 1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: Presidio
Project No.: A000003.08
Location: Building 937
Sampled By: Z. Maliga
Reporting (circle all that apply)
Hard Copy Format: PDF
Electronic Format: EDF (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III/IV (See Remarks)
Report results to (email or fax no.):
(1) mkking@ekiconsult.com (Michelle King)
(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

Laboratory: (Address/Phone No./Contact Person)
Attn: Dimple Sharma
STL San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919
Fax: 925-484-1096

EKI COC No.: 2
Revision: ______ (A, B, C, D, etc.)

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	VOCs (EPA 8260B)	Title 22 Metals (EPA 6020)	TPH-D (EPA 8015M)	TPH-G (EPA 8015M)	% moisture				EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937SB126[3]		6/20/06	11:15	soil	3 encores	X										STD	Level IV (4)
"			"		1 jar					X							"
937SB127[2]			11:30		3 encores	X											Level III (3)
"			"		1 jar					X							"
937SB128[3]			11:54		3 encores	X											"
"			"		1 jar					X							"

Special Instructions/Notes:

Temp. 2°C

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Z. Maliga	6/20/06	16:00	[signature]
[signature] STL-SF	6/20/06	1805	[signature] STL-SF

LOGIN SAMPLE RECEIPT CHECK LIST

Client: Erler & Kalinowski, Inc. Job Number: 720-4197-1

Login Number: 4197

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

ANALYTICAL REPORT

Job Number: 720-4215-1

Job Description: Presidio 937 Marine drive/Bldg. 937

For:
Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010

Attention: Mr. Adam Abeles

Afsaneh Salimpour
Project Manager I
asalimpour@stl-inc.com
08/30/2006
Revision: 2

cc: Mr. John Dewitt
Mr. Nina Pozdnyakova

Project Manager: Afsaneh Salimpour

Severn Trent Laboratories, Inc.
STL San Francisco 1220 Quarry Lane, Pleasanton, CA 94566
Tel (925) 484-1919 Fax (925) 484-1096 www.stl-inc.com

EXECUTIVE SUMMARY - Detections

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-4215-1	**937SB114 [1.5]**				
Acetone		68	53	ug/Kg	8260B
Percent Moisture		9.9	0.10	%	PercentMoisture
720-4215-2	**937SB115 [2]**				
Percent Moisture		17	0.10	%	PercentMoisture
720-4215-3	**937SB112 [2]**				
Tetrachloroethene		20	5.2	ug/Kg	8260B
Percent Moisture		7.4	0.10	%	PercentMoisture
720-4215-4	**937SB112 [2] DUP**				
Tetrachloroethene		43	4.9	ug/Kg	8260B
Percent Moisture		7.4	0.10	%	PercentMoisture
720-4215-5	**937SB129 [2]**				
Percent Moisture		17	0.10	%	PercentMoisture
720-4215-6	**937SB129 [2] DUP**				
Percent Moisture		17	0.10	%	PercentMoisture
720-4215-7	**937SB130 [2]**				
Percent Moisture		8.5	0.10	%	PercentMoisture
720-4215-8	**937SB110 [2]**				
Percent Moisture		17	0.10	%	PercentMoisture

EXECUTIVE SUMMARY - Detections

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-4215-9	**933SB103 [2.5]**				
Acetone		91	58	ug/Kg	8260B
Diesel Range Organics [C12-C24]		5.5	1.1	mg/Kg	8015B
Arsenic		1.7	0.19	mg/Kg	6020
Barium		4.6	0.19	mg/Kg	6020
Chromium		30	0.19	mg/Kg	6020
Cobalt		5.0	0.19	mg/Kg	6020
Copper		3.0	0.19	mg/Kg	6020
Lead		9.5	0.19	mg/Kg	6020
Nickel		35	0.19	mg/Kg	6020
Vanadium		15	0.19	mg/Kg	6020
Zinc		13	0.47	mg/Kg	6020
Percent Moisture		6.1	0.10	%	PercentMoisture

METHOD SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Volatile Organic Compounds by GC/MS (Low Level)	STL SF	SW846 8260B	
Closed System Purge & Trap/Laboratory	STL SF		SW846 5035
Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)	STL SF	SW846 8015B	
Purge and Trap for Solids	STL SF		SW846 5030B
Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	STL SF	SW846 8015B	
Ultrasonic Extraction	STL SF		SW846 3550B
Inductively Coupled Plasma - Mass Spectrometry	STL SEA	SW846 6020	
Acid Digestion of Sediments, Sludges, and Soils	STL SEA		SW846 3050B
Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)	STL SF	SW846 7471A	
Mercury in Solid or Semi-Solid Waste (Manual	STL SF		SW846 7471A
Percent Moisture	STL SF	EPA PercentMoisture	

LAB REFERENCES:

STL SEA = STL Seattle

STL SF = STL San Francisco

METHOD REFERENCES:

EPA - US Environmental Protection Agency

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Method	Analyst	Analyst ID
SW846 8260B	Lee, Michael	ML
SW846 8015B	Relja, Marlene	MR
SW846 8015B	Le, Lien	LL
SW846 6020	Woo, Fred C	FCW
SW846 7471A	Barekzai, Shafi	SB
EPA PercentMoisture	Thurman, Elvira	ET

SAMPLE SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-4215-1	937SB114 [1.5]	Solid	06/20/2006 1700	06/21/2006 1910
720-4215-2	937SB115 [2]	Solid	06/20/2006 1708	06/21/2006 1910
720-4215-3	937SB112 [2]	Solid	06/21/2006 1025	06/21/2006 1910
720-4215-4	937SB112 [2] DUP	Solid	06/21/2006 1025	06/21/2006 1910
720-4215-5	937SB129 [2]	Solid	06/21/2006 1045	06/21/2006 1910
720-4215-6	937SB129 [2] DUP	Solid	06/21/2006 1045	06/21/2006 1910
720-4215-7	937SB130 [2]	Solid	06/21/2006 1215	06/21/2006 1910
720-4215-8	937SB110 [2]	Solid	06/21/2006 1315	06/21/2006 1910
720-4215-9	933SB103 [2.5]	Solid	06/21/2006 1505	06/21/2006 1910

Client: Erler & Kalinowski, Inc. | Job Number: 720-4215-1

Client Sample ID: 937SB114 [1.5]

Lab Sample ID:	720-4215-1			Date Sampled:	06/20/2006 1700
Client Matrix:	Solid	% Moisture:	9.9	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10415	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10457	Lab File ID:	062706008.D
Dilution:	1.0		Initial Weight/Volume:	5.20 g
Date Analyzed:	06/27/2006 1411		Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.3
Acetone		68		53
Benzene		ND		5.3
Dichlorobromomethane		ND		5.3
Bromobenzene		ND		5.3
Chlorobromomethane		ND		21
Bromoform		ND		5.3
Bromomethane		ND		11
Methyl Ethyl Ketone		ND		53
n-Butylbenzene		ND		5.3
sec-Butylbenzene		ND		5.3
tert-Butylbenzene		ND		5.3
Carbon disulfide		ND		5.3
Carbon tetrachloride		ND		5.3
Chlorobenzene		ND		5.3
Chloroethane		ND		11
Chloroform		ND		5.3
Chloromethane		ND		11
2-Chlorotoluene		ND		5.3
4-Chlorotoluene		ND		5.3
Chlorodibromomethane		ND		5.3
1,2-Dichlorobenzene		ND		5.3
1,3-Dichlorobenzene		ND		5.3
1,4-Dichlorobenzene		ND		5.3
1,3-Dichloropropane		ND		5.3
1,1-Dichloropropene		ND		5.3
1,2-Dibromo-3-Chloropropane		ND		53
Ethylene Dibromide		ND		5.3
Dibromomethane		ND		11
Dichlorodifluoromethane		ND		11
1,1-Dichloroethane		ND		5.3
1,2-Dichloroethane		ND		5.3
1,1-Dichloroethene		ND		5.3
cis-1,2-Dichloroethene		ND		5.3
trans-1,2-Dichloroethene		ND		5.3
1,2-Dichloropropane		ND		5.3
cis-1,3-Dichloropropene		ND		5.3
trans-1,3-Dichloropropene		ND		5.3
Ethylbenzene		ND		5.3
Hexachlorobutadiene		ND		5.3
Isopropylbenzene		ND		5.3
4-Isopropyltoluene		ND		5.3
Methylene Chloride		ND		11

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB114 [1.5]

Lab Sample ID:	720-4215-1			Date Sampled:	06/20/2006 1700
Client Matrix:	Solid	% Moisture:	9.9	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10415		Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10457		Lab File ID:	062706008.D
Dilution:	1.0			Initial Weight/Volume:	5.20 g
Date Analyzed:	06/27/2006 1411			Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		53
Naphthalene		ND		11
N-Propylbenzene		ND		5.3
Styrene		ND		5.3
1,1,1,2-Tetrachloroethane		ND		5.3
1,1,2,2-Tetrachloroethane		ND		5.3
Tetrachloroethene		ND		5.3
Toluene		ND		5.3
1,2,3-Trichlorobenzene		ND		5.3
1,2,4-Trichlorobenzene		ND		5.3
1,1,1-Trichloroethane		ND		5.3
1,1,2-Trichloroethane		ND		5.3
Trichloroethene		ND		5.3
Trichlorofluoromethane		ND		5.3
1,2,3-Trichloropropane		ND		5.3
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.3
1,2,4-Trimethylbenzene		ND		5.3
1,3,5-Trimethylbenzene		ND		5.3
Vinyl acetate		ND		53
Vinyl chloride		ND		5.3
Xylenes, Total		ND		11
2,2-Dichloropropane		ND		5.3

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	109	60 - 140
1,2-Dichloroethane-d4 (Surr)	107	60 - 140
Toluene-d8 (Surr)	90	70 - 130

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB115 [2]

Lab Sample ID:	720-4215-2			Date Sampled:	06/20/2006 1708
Client Matrix:	Solid	% Moisture:	17.0	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606013.D
Dilution:	1.0		Initial Weight/Volume:	4.92 g
Date Analyzed:	06/26/2006 1627		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		6.1
Acetone		ND		61
Benzene		ND		6.1
Dichlorobromomethane		ND		6.1
Bromobenzene		ND		6.1
Chlorobromomethane		ND		24
Bromoform		ND		6.1
Bromomethane		ND		12
Methyl Ethyl Ketone		ND		61
n-Butylbenzene		ND		6.1
sec-Butylbenzene		ND		6.1
tert-Butylbenzene		ND		6.1
Carbon disulfide		ND		6.1
Carbon tetrachloride		ND		6.1
Chlorobenzene		ND		6.1
Chloroethane		ND		12
Chloroform		ND		6.1
Chloromethane		ND		12
2-Chlorotoluene		ND		6.1
4-Chlorotoluene		ND		6.1
Chlorodibromomethane		ND		6.1
1,2-Dichlorobenzene		ND		6.1
1,3-Dichlorobenzene		ND		6.1
1,4-Dichlorobenzene		ND		6.1
1,3-Dichloropropane		ND		6.1
1,1-Dichloropropene		ND		6.1
1,2-Dibromo-3-Chloropropane		ND		61
Ethylene Dibromide		ND		6.1
Dibromomethane		ND		12
Dichlorodifluoromethane		ND		12
1,1-Dichloroethane		ND		6.1
1,2-Dichloroethane		ND		6.1
1,1-Dichloroethene		ND		6.1
cis-1,2-Dichloroethene		ND		6.1
trans-1,2-Dichloroethene		ND		6.1
1,2-Dichloropropane		ND		6.1
cis-1,3-Dichloropropene		ND		6.1
trans-1,3-Dichloropropene		ND		6.1
Ethylbenzene		ND		6.1
Hexachlorobutadiene		ND		6.1
Isopropylbenzene		ND		6.1
4-Isopropyltoluene		ND		6.1
Methylene Chloride		ND		12

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB115 [2]

Lab Sample ID:	720-4215-2			Date Sampled:	06/20/2006 1708
Client Matrix:	Solid	% Moisture:	17.0	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606013.D
Dilution:	1.0		Initial Weight/Volume:	4.92 g
Date Analyzed:	06/26/2006 1627		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		61
Naphthalene		ND		12
N-Propylbenzene		ND		6.1
Styrene		ND		6.1
1,1,1,2-Tetrachloroethane		ND		6.1
1,1,2,2-Tetrachloroethane		ND		6.1
Tetrachloroethene		ND		6.1
Toluene		ND		6.1
1,2,3-Trichlorobenzene		ND		6.1
1,2,4-Trichlorobenzene		ND		6.1
1,1,1-Trichloroethane		ND		6.1
1,1,2-Trichloroethane		ND		6.1
Trichloroethene		ND		6.1
Trichlorofluoromethane		ND		6.1
1,2,3-Trichloropropane		ND		6.1
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		6.1
1,2,4-Trimethylbenzene		ND		6.1
1,3,5-Trimethylbenzene		ND		6.1
Vinyl acetate		ND		61
Vinyl chloride		ND		6.1
Xylenes, Total		ND		12
2,2-Dichloropropane		ND		6.1

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	121	60 - 140
1,2-Dichloroethane-d4 (Surr)	108	60 - 140
Toluene-d8 (Surr)	100	70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc.　　Job Number: 720-4215-1

Client Sample ID: 937SB112 [2]

Lab Sample ID:	720-4215-3			Date Sampled:	06/21/2006 1025
Client Matrix:	Solid	% Moisture:	7.4	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606014.D
Dilution:	1.0		Initial Weight/Volume:	5.15 g
Date Analyzed:	06/26/2006 1653		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.2
Acetone		ND		52
Benzene		ND		5.2
Dichlorobromomethane		ND		5.2
Bromobenzene		ND		5.2
Chlorobromomethane		ND		21
Bromoform		ND		5.2
Bromomethane		ND		10
Methyl Ethyl Ketone		ND		52
n-Butylbenzene		ND		5.2
sec-Butylbenzene		ND		5.2
tert-Butylbenzene		ND		5.2
Carbon disulfide		ND		5.2
Carbon tetrachloride		ND		5.2
Chlorobenzene		ND		5.2
Chloroethane		ND		10
Chloroform		ND		5.2
Chloromethane		ND		10
2-Chlorotoluene		ND		5.2
4-Chlorotoluene		ND		5.2
Chlorodibromomethane		ND		5.2
1,2-Dichlorobenzene		ND		5.2
1,3-Dichlorobenzene		ND		5.2
1,4-Dichlorobenzene		ND		5.2
1,3-Dichloropropane		ND		5.2
1,1-Dichloropropene		ND		5.2
1,2-Dibromo-3-Chloropropane		ND		52
Ethylene Dibromide		ND		5.2
Dibromomethane		ND		10
Dichlorodifluoromethane		ND		10
1,1-Dichloroethane		ND		5.2
1,2-Dichloroethane		ND		5.2
1,1-Dichloroethene		ND		5.2
cis-1,2-Dichloroethene		ND		5.2
trans-1,2-Dichloroethene		ND		5.2
1,2-Dichloropropane		ND		5.2
cis-1,3-Dichloropropene		ND		5.2
trans-1,3-Dichloropropene		ND		5.2
Ethylbenzene		ND		5.2
Hexachlorobutadiene		ND		5.2
Isopropylbenzene		ND		5.2
4-Isopropyltoluene		ND		5.2
Methylene Chloride		ND		10

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB112 [2]

Lab Sample ID:	720-4215-3			Date Sampled:	06/21/2006 1025
Client Matrix:	Solid	% Moisture:	7.4	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402		Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456		Lab File ID:	062606014.D
Dilution:	1.0			Initial Weight/Volume:	5.15 g
Date Analyzed:	06/26/2006 1653			Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		52
Naphthalene		ND		10
N-Propylbenzene		ND		5.2
Styrene		ND		5.2
1,1,1,2-Tetrachloroethane		ND		5.2
1,1,2,2-Tetrachloroethane		ND		5.2
Tetrachloroethene		20		5.2
Toluene		ND		5.2
1,2,3-Trichlorobenzene		ND		5.2
1,2,4-Trichlorobenzene		ND		5.2
1,1,1-Trichloroethane		ND		5.2
1,1,2-Trichloroethane		ND		5.2
Trichloroethene		ND		5.2
Trichlorofluoromethane		ND		5.2
1,2,3-Trichloropropane		ND		5.2
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.2
1,2,4-Trimethylbenzene		ND		5.2
1,3,5-Trimethylbenzene		ND		5.2
Vinyl acetate		ND		52
Vinyl chloride		ND		5.2
Xylenes, Total		ND		10
2,2-Dichloropropane		ND		5.2

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	124	60 - 140
1,2-Dichloroethane-d4 (Surr)	113	60 - 140
Toluene-d8 (Surr)	100	70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB112 [2] DUP

Lab Sample ID:	720-4215-4			Date Sampled:	06/21/2006 1025
Client Matrix:	Solid	% Moisture:	7.4	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10415	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10457	Lab File ID:	062706009.D
Dilution:	1.0		Initial Weight/Volume:	5.51 g
Date Analyzed:	06/27/2006 1436		Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		4.9
Acetone		ND		49
Benzene		ND		4.9
Dichlorobromomethane		ND		4.9
Bromobenzene		ND		4.9
Chlorobromomethane		ND		20
Bromoform		ND		4.9
Bromomethane		ND		9.8
Methyl Ethyl Ketone		ND		49
n-Butylbenzene		ND		4.9
sec-Butylbenzene		ND		4.9
tert-Butylbenzene		ND		4.9
Carbon disulfide		ND		4.9
Carbon tetrachloride		ND		4.9
Chlorobenzene		ND		4.9
Chloroethane		ND		9.8
Chloroform		ND		4.9
Chloromethane		ND		9.8
2-Chlorotoluene		ND		4.9
4-Chlorotoluene		ND		4.9
Chlorodibromomethane		ND		4.9
1,2-Dichlorobenzene		ND		4.9
1,3-Dichlorobenzene		ND		4.9
1,4-Dichlorobenzene		ND		4.9
1,3-Dichloropropane		ND		4.9
1,1-Dichloropropene		ND		4.9
1,2-Dibromo-3-Chloropropane		ND		49
Ethylene Dibromide		ND		4.9
Dibromomethane		ND		9.8
Dichlorodifluoromethane		ND		9.8
1,1-Dichloroethane		ND		4.9
1,2-Dichloroethane		ND		4.9
1,1-Dichloroethene		ND		4.9
cis-1,2-Dichloroethene		ND		4.9
trans-1,2-Dichloroethene		ND		4.9
1,2-Dichloropropane		ND		4.9
cis-1,3-Dichloropropene		ND		4.9
trans-1,3-Dichloropropene		ND		4.9
Ethylbenzene		ND		4.9
Hexachlorobutadiene		ND		4.9
Isopropylbenzene		ND		4.9
4-Isopropyltoluene		ND		4.9
Methylene Chloride		ND		9.8

Client: Erler & Kalinowski, Inc.　　Job Number: 720-4215-1

Client Sample ID: 937SB112 [2] DUP

Lab Sample ID:	720-4215-4			Date Sampled:	06/21/2006 1025
Client Matrix:	Solid	% Moisture:	7.4	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10415		Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10457		Lab File ID:	062706009.D
Dilution:	1.0			Initial Weight/Volume:	5.51 g
Date Analyzed:	06/27/2006 1436			Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		49
Naphthalene		ND		9.8
N-Propylbenzene		ND		4.9
Styrene		ND		4.9
1,1,1,2-Tetrachloroethane		ND		4.9
1,1,2,2-Tetrachloroethane		ND		4.9
Tetrachloroethene		43		4.9
Toluene		ND		4.9
1,2,3-Trichlorobenzene		ND		4.9
1,2,4-Trichlorobenzene		ND		4.9
1,1,1-Trichloroethane		ND		4.9
1,1,2-Trichloroethane		ND		4.9
Trichloroethene		ND		4.9
Trichlorofluoromethane		ND		4.9
1,2,3-Trichloropropane		ND		4.9
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		4.9
1,2,4-Trimethylbenzene		ND		4.9
1,3,5-Trimethylbenzene		ND		4.9
Vinyl acetate		ND		49
Vinyl chloride		ND		4.9
Xylenes, Total		ND		9.8
2,2-Dichloropropane		ND		4.9

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	138	60 - 140
1,2-Dichloroethane-d4 (Surr)	115	60 - 140
Toluene-d8 (Surr)	99	70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB129 [2]

Lab Sample ID:	720-4215-5			Date Sampled:	06/21/2006 1045
Client Matrix:	Solid	% Moisture:	16.9	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606016.D
Dilution:	1.0		Initial Weight/Volume:	5.27 g
Date Analyzed:	06/26/2006 1744		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.7
Acetone		ND		57
Benzene		ND		5.7
Dichlorobromomethane		ND		5.7
Bromobenzene		ND		5.7
Chlorobromomethane		ND		23
Bromoform		ND		5.7
Bromomethane		ND		11
Methyl Ethyl Ketone		ND		57
n-Butylbenzene		ND		5.7
sec-Butylbenzene		ND		5.7
tert-Butylbenzene		ND		5.7
Carbon disulfide		ND		5.7
Carbon tetrachloride		ND		5.7
Chlorobenzene		ND		5.7
Chloroethane		ND		11
Chloroform		ND		5.7
Chloromethane		ND		11
2-Chlorotoluene		ND		5.7
4-Chlorotoluene		ND		5.7
Chlorodibromomethane		ND		5.7
1,2-Dichlorobenzene		ND		5.7
1,3-Dichlorobenzene		ND		5.7
1,4-Dichlorobenzene		ND		5.7
1,3-Dichloropropane		ND		5.7
1,1-Dichloropropene		ND		5.7
1,2-Dibromo-3-Chloropropane		ND		57
Ethylene Dibromide		ND		5.7
Dibromomethane		ND		11
Dichlorodifluoromethane		ND		11
1,1-Dichloroethane		ND		5.7
1,2-Dichloroethane		ND		5.7
1,1-Dichloroethene		ND		5.7
cis-1,2-Dichloroethene		ND		5.7
trans-1,2-Dichloroethene		ND		5.7
1,2-Dichloropropane		ND		5.7
cis-1,3-Dichloropropene		ND		5.7
trans-1,3-Dichloropropene		ND		5.7
Ethylbenzene		ND		5.7
Hexachlorobutadiene		ND		5.7
Isopropylbenzene		ND		5.7
4-Isopropyltoluene		ND		5.7
Methylene Chloride		ND		11

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB129 [2]

Lab Sample ID:	720-4215-5			Date Sampled:	06/21/2006 1045
Client Matrix:	Solid	% Moisture:	16.9	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID: Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID: 062606016.D
Dilution:	1.0		Initial Weight/Volume: 5.27 g
Date Analyzed:	06/26/2006 1744		Final Weight/Volume: 10 mL
Date Prepared:	06/26/2006 1400		

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		57
Naphthalene		ND		11
N-Propylbenzene		ND		5.7
Styrene		ND		5.7
1,1,1,2-Tetrachloroethane		ND		5.7
1,1,2,2-Tetrachloroethane		ND		5.7
Tetrachloroethene		ND		5.7
Toluene		ND		5.7
1,2,3-Trichlorobenzene		ND		5.7
1,2,4-Trichlorobenzene		ND		5.7
1,1,1-Trichloroethane		ND		5.7
1,1,2-Trichloroethane		ND		5.7
Trichloroethene		ND		5.7
Trichlorofluoromethane		ND		5.7
1,2,3-Trichloropropane		ND		5.7
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.7
1,2,4-Trimethylbenzene		ND		5.7
1,3,5-Trimethylbenzene		ND		5.7
Vinyl acetate		ND		57
Vinyl chloride		ND		5.7
Xylenes, Total		ND		11
2,2-Dichloropropane		ND		5.7

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	109	60 - 140
1,2-Dichloroethane-d4 (Surr)	115	60 - 140
Toluene-d8 (Surr)	95	70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB129 [2] DUP

Lab Sample ID:	720-4215-6			Date Sampled:	06/21/2006 1045
Client Matrix:	Solid	% Moisture:	16.9	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606017.D
Dilution:	1.0		Initial Weight/Volume:	5.31 g
Date Analyzed:	06/26/2006 1809		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.7
Acetone		ND		57
Benzene		ND		5.7
Dichlorobromomethane		ND		5.7
Bromobenzene		ND		5.7
Chlorobromomethane		ND		23
Bromoform		ND		5.7
Bromomethane		ND		11
Methyl Ethyl Ketone		ND		57
n-Butylbenzene		ND		5.7
sec-Butylbenzene		ND		5.7
tert-Butylbenzene		ND		5.7
Carbon disulfide		ND		5.7
Carbon tetrachloride		ND		5.7
Chlorobenzene		ND		5.7
Chloroethane		ND		11
Chloroform		ND		5.7
Chloromethane		ND		11
2-Chlorotoluene		ND		5.7
4-Chlorotoluene		ND		5.7
Chlorodibromomethane		ND		5.7
1,2-Dichlorobenzene		ND		5.7
1,3-Dichlorobenzene		ND		5.7
1,4-Dichlorobenzene		ND		5.7
1,3-Dichloropropane		ND		5.7
1,1-Dichloropropene		ND		5.7
1,2-Dibromo-3-Chloropropane		ND		57
Ethylene Dibromide		ND		5.7
Dibromomethane		ND		11
Dichlorodifluoromethane		ND		11
1,1-Dichloroethane		ND		5.7
1,2-Dichloroethane		ND		5.7
1,1-Dichloroethene		ND		5.7
cis-1,2-Dichloroethene		ND		5.7
trans-1,2-Dichloroethene		ND		5.7
1,2-Dichloropropane		ND		5.7
cis-1,3-Dichloropropene		ND		5.7
trans-1,3-Dichloropropene		ND		5.7
Ethylbenzene		ND		5.7
Hexachlorobutadiene		ND		5.7
Isopropylbenzene		ND		5.7
4-Isopropyltoluene		ND		5.7
Methylene Chloride		ND		11

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB129 [2] DUP

Lab Sample ID:	720-4215-6			Date Sampled:	06/21/2006 1045
Client Matrix:	Solid	% Moisture:	16.9	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606017.D
Dilution:	1.0		Initial Weight/Volume:	5.31 g
Date Analyzed:	06/26/2006 1809		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		57
Naphthalene		ND		11
N-Propylbenzene		ND		5.7
Styrene		ND		5.7
1,1,1,2-Tetrachloroethane		ND		5.7
1,1,2,2-Tetrachloroethane		ND		5.7
Tetrachloroethene		ND		5.7
Toluene		ND		5.7
1,2,3-Trichlorobenzene		ND		5.7
1,2,4-Trichlorobenzene		ND		5.7
1,1,1-Trichloroethane		ND		5.7
1,1,2-Trichloroethane		ND		5.7
Trichloroethene		ND		5.7
Trichlorofluoromethane		ND		5.7
1,2,3-Trichloropropane		ND		5.7
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.7
1,2,4-Trimethylbenzene		ND		5.7
1,3,5-Trimethylbenzene		ND		5.7
Vinyl acetate		ND		57
Vinyl chloride		ND		5.7
Xylenes, Total		ND		11
2,2-Dichloropropane		ND		5.7

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	106	60 - 140
1,2-Dichloroethane-d4 (Surr)	109	60 - 140
Toluene-d8 (Surr)	93	70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB130 [2]

Lab Sample ID:	720-4215-7			Date Sampled:	06/21/2006 1215
Client Matrix:	Solid	% Moisture:	8.5	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606018.D
Dilution:	1.0		Initial Weight/Volume:	4.79 g
Date Analyzed:	06/26/2006 1835		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.7
Acetone		ND		57
Benzene		ND		5.7
Dichlorobromomethane		ND		5.7
Bromobenzene		ND		5.7
Chlorobromomethane		ND		23
Bromoform		ND		5.7
Bromomethane		ND		11
Methyl Ethyl Ketone		ND		57
n-Butylbenzene		ND		5.7
sec-Butylbenzene		ND		5.7
tert-Butylbenzene		ND		5.7
Carbon disulfide		ND		5.7
Carbon tetrachloride		ND		5.7
Chlorobenzene		ND		5.7
Chloroethane		ND		11
Chloroform		ND		5.7
Chloromethane		ND		11
2-Chlorotoluene		ND		5.7
4-Chlorotoluene		ND		5.7
Chlorodibromomethane		ND		5.7
1,2-Dichlorobenzene		ND		5.7
1,3-Dichlorobenzene		ND		5.7
1,4-Dichlorobenzene		ND		5.7
1,3-Dichloropropane		ND		5.7
1,1-Dichloropropene		ND		5.7
1,2-Dibromo-3-Chloropropane		ND		57
Ethylene Dibromide		ND		5.7
Dibromomethane		ND		11
Dichlorodifluoromethane		ND		11
1,1-Dichloroethane		ND		5.7
1,2-Dichloroethane		ND		5.7
1,1-Dichloroethene		ND		5.7
cis-1,2-Dichloroethene		ND		5.7
trans-1,2-Dichloroethene		ND		5.7
1,2-Dichloropropane		ND		5.7
cis-1,3-Dichloropropene		ND		5.7
trans-1,3-Dichloropropene		ND		5.7
Ethylbenzene		ND		5.7
Hexachlorobutadiene		ND		5.7
Isopropylbenzene		ND		5.7
4-Isopropyltoluene		ND		5.7
Methylene Chloride		ND		11

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB130 [2]

Lab Sample ID:	720-4215-7			Date Sampled:	06/21/2006 1215
Client Matrix:	Solid	% Moisture:	8.5	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606018.D
Dilution:	1.0		Initial Weight/Volume:	4.79 g
Date Analyzed:	06/26/2006 1835		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		57
Naphthalene		ND		11
N-Propylbenzene		ND		5.7
Styrene		ND		5.7
1,1,1,2-Tetrachloroethane		ND		5.7
1,1,2,2-Tetrachloroethane		ND		5.7
Tetrachloroethene		ND		5.7
Toluene		ND		5.7
1,2,3-Trichlorobenzene		ND		5.7
1,2,4-Trichlorobenzene		ND		5.7
1,1,1-Trichloroethane		ND		5.7
1,1,2-Trichloroethane		ND		5.7
Trichloroethene		ND		5.7
Trichlorofluoromethane		ND		5.7
1,2,3-Trichloropropane		ND		5.7
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.7
1,2,4-Trimethylbenzene		ND		5.7
1,3,5-Trimethylbenzene		ND		5.7
Vinyl acetate		ND		57
Vinyl chloride		ND		5.7
Xylenes, Total		ND		11
2,2-Dichloropropane		ND		5.7

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	106	60 - 140
1,2-Dichloroethane-d4 (Surr)	117	60 - 140
Toluene-d8 (Surr)	96	70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB110 [2]

Lab Sample ID:	720-4215-8			Date Sampled:	06/21/2006 1315
Client Matrix:	Solid	% Moisture:	17.4	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606019.D
Dilution:	1.0		Initial Weight/Volume:	4.45 g
Date Analyzed:	06/26/2006 1900		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		6.8
Acetone		ND		68
Benzene		ND		6.8
Dichlorobromomethane		ND		6.8
Bromobenzene		ND		6.8
Chlorobromomethane		ND		27
Bromoform		ND		6.8
Bromomethane		ND		14
Methyl Ethyl Ketone		ND		68
n-Butylbenzene		ND		6.8
sec-Butylbenzene		ND		6.8
tert-Butylbenzene		ND		6.8
Carbon disulfide		ND		6.8
Carbon tetrachloride		ND		6.8
Chlorobenzene		ND		6.8
Chloroethane		ND		14
Chloroform		ND		6.8
Chloromethane		ND		14
2-Chlorotoluene		ND		6.8
4-Chlorotoluene		ND		6.8
Chlorodibromomethane		ND		6.8
1,2-Dichlorobenzene		ND		6.8
1,3-Dichlorobenzene		ND		6.8
1,4-Dichlorobenzene		ND		6.8
1,3-Dichloropropane		ND		6.8
1,1-Dichloropropene		ND		6.8
1,2-Dibromo-3-Chloropropane		ND		68
Ethylene Dibromide		ND		6.8
Dibromomethane		ND		14
Dichlorodifluoromethane		ND		14
1,1-Dichloroethane		ND		6.8
1,2-Dichloroethane		ND		6.8
1,1-Dichloroethene		ND		6.8
cis-1,2-Dichloroethene		ND		6.8
trans-1,2-Dichloroethene		ND		6.8
1,2-Dichloropropane		ND		6.8
cis-1,3-Dichloropropene		ND		6.8
trans-1,3-Dichloropropene		ND		6.8
Ethylbenzene		ND		6.8
Hexachlorobutadiene		ND		6.8
Isopropylbenzene		ND		6.8
4-Isopropyltoluene		ND		6.8
Methylene Chloride		ND		14

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 937SB110 [2]

Lab Sample ID:	720-4215-8			Date Sampled:	06/21/2006 1315
Client Matrix:	Solid	% Moisture:	17.4	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10402	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10456	Lab File ID:	062606019.D
Dilution:	1.0		Initial Weight/Volume:	4.45 g
Date Analyzed:	06/26/2006 1900		Final Weight/Volume:	10 mL
Date Prepared:	06/26/2006 1400			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		68
Naphthalene		ND		14
N-Propylbenzene		ND		6.8
Styrene		ND		6.8
1,1,1,2-Tetrachloroethane		ND		6.8
1,1,2,2-Tetrachloroethane		ND		6.8
Tetrachloroethene		ND		6.8
Toluene		ND		6.8
1,2,3-Trichlorobenzene		ND		6.8
1,2,4-Trichlorobenzene		ND		6.8
1,1,1-Trichloroethane		ND		6.8
1,1,2-Trichloroethane		ND		6.8
Trichloroethene		ND		6.8
Trichlorofluoromethane		ND		6.8
1,2,3-Trichloropropane		ND		6.8
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		6.8
1,2,4-Trimethylbenzene		ND		6.8
1,3,5-Trimethylbenzene		ND		6.8
Vinyl acetate		ND		68
Vinyl chloride		ND		6.8
Xylenes, Total		ND		14
2,2-Dichloropropane		ND		6.8

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	112	60 - 140
1,2-Dichloroethane-d4 (Surr)	114	60 - 140
Toluene-d8 (Surr)	92	70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 933SB103 [2.5]

Lab Sample ID:	720-4215-9			Date Sampled:	06/21/2006 1505
Client Matrix:	Solid	% Moisture:	6.1	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10415	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10457	Lab File ID:	062706010.D
Dilution:	1.0		Initial Weight/Volume:	4.61 g
Date Analyzed:	06/27/2006 1501		Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
Methyl tert-butyl ether		ND		5.8
Acetone		91		58
Benzene		ND		5.8
Dichlorobromomethane		ND		5.8
Bromobenzene		ND		5.8
Chlorobromomethane		ND		23
Bromoform		ND		5.8
Bromomethane		ND		12
Methyl Ethyl Ketone		ND		58
n-Butylbenzene		ND		5.8
sec-Butylbenzene		ND		5.8
tert-Butylbenzene		ND		5.8
Carbon disulfide		ND		5.8
Carbon tetrachloride		ND		5.8
Chlorobenzene		ND		5.8
Chloroethane		ND		12
Chloroform		ND		5.8
Chloromethane		ND		12
2-Chlorotoluene		ND		5.8
4-Chlorotoluene		ND		5.8
Chlorodibromomethane		ND		5.8
1,2-Dichlorobenzene		ND		5.8
1,3-Dichlorobenzene		ND		5.8
1,4-Dichlorobenzene		ND		5.8
1,3-Dichloropropane		ND		5.8
1,1-Dichloropropene		ND		5.8
1,2-Dibromo-3-Chloropropane		ND		58
Ethylene Dibromide		ND		5.8
Dibromomethane		ND		12
Dichlorodifluoromethane		ND		12
1,1-Dichloroethane		ND		5.8
1,2-Dichloroethane		ND		5.8
1,1-Dichloroethene		ND		5.8
cis-1,2-Dichloroethene		ND		5.8
trans-1,2-Dichloroethene		ND		5.8
1,2-Dichloropropane		ND		5.8
cis-1,3-Dichloropropene		ND		5.8
trans-1,3-Dichloropropene		ND		5.8
Ethylbenzene		ND		5.8
Hexachlorobutadiene		ND		5.8
Isopropylbenzene		ND		5.8
4-Isopropyltoluene		ND		5.8
Methylene Chloride		ND		12

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 933SB103 [2.5]

Lab Sample ID:	720-4215-9			Date Sampled:	06/21/2006 1505
Client Matrix:	Solid	% Moisture:	6.1	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10415	Instrument ID:	Agilent 75MSD
Preparation:	5035	Prep Batch: 720-10457	Lab File ID:	062706010.D
Dilution:	1.0		Initial Weight/Volume:	4.61 g
Date Analyzed:	06/27/2006 1501		Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230			

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	RL
methyl isobutyl ketone		ND		58
Naphthalene		ND		12
N-Propylbenzene		ND		5.8
Styrene		ND		5.8
1,1,1,2-Tetrachloroethane		ND		5.8
1,1,2,2-Tetrachloroethane		ND		5.8
Tetrachloroethene		ND		5.8
Toluene		ND		5.8
1,2,3-Trichlorobenzene		ND		5.8
1,2,4-Trichlorobenzene		ND		5.8
1,1,1-Trichloroethane		ND		5.8
1,1,2-Trichloroethane		ND		5.8
Trichloroethene		ND		5.8
Trichlorofluoromethane		ND		5.8
1,2,3-Trichloropropane		ND		5.8
1,1,2-Trichloro-1,2,2-trifluoroethane		ND		5.8
1,2,4-Trimethylbenzene		ND		5.8
1,3,5-Trimethylbenzene		ND		5.8
Vinyl acetate		ND		58
Vinyl chloride		ND		5.8
Xylenes, Total		ND		12
2,2-Dichloropropane		ND		5.8

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	166	X	60 - 140
1,2-Dichloroethane-d4 (Surr)	116		60 - 140
Toluene-d8 (Surr)	95		70 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 933SB103 [2.5]

Lab Sample ID:	720-4215-9			Date Sampled:	06/21/2006 1505
Client Matrix:	Solid	% Moisture:	6.1	Date Received:	06/21/2006 1910

8015B Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

Method:	8015B	Analysis Batch: 720-11176	Instrument ID:	GC 5
Preparation:	5030B		Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	4.63 g
Date Analyzed:	06/30/2006 1524		Final Weight/Volume:	10 mL
Date Prepared:	06/30/2006 1524		Injection Volume:	
			Column ID:	PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Gasoline Range Organics (GRO)-C7-C12		ND		0.46

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	69	58 - 124

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 933SB103 [2.5]

Lab Sample ID:	720-4215-9			Date Sampled:	06/21/2006 1505
Client Matrix:	Solid	% Moisture:	6.1	Date Received:	06/21/2006 1910

8015B Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Method:	8015B	Analysis Batch: 720-10492	Instrument ID:	HP DRO5
Preparation:	3550B	Prep Batch: 720-10212	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	30.27 g
Date Analyzed:	06/27/2006 1847		Final Weight/Volume:	5 mL
Date Prepared:	06/22/2006 1034		Injection Volume:	
			Column ID:	PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Diesel Range Organics [C12-C24]		5.5		1.1

Surrogate	%Rec	Acceptance Limits
o-Terphenyl	73	60 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Client Sample ID: 933SB103 [2.5]

Lab Sample ID:	720-4215-9			Date Sampled:	06/21/2006 1505
Client Matrix:	Solid	% Moisture:	6.1	Date Received:	06/21/2006 1910

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 580-8342	Instrument ID:	SEA026
Preparation:	3050B	Prep Batch: 580-8323	Lab File ID:	N/A
Dilution:	5.0		Initial Weight/Volume:	0.5691 g
Date Analyzed:	06/26/2006 1248		Final Weight/Volume:	50 mL
Date Prepared:	06/26/2006 1050			

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Arsenic		1.7		0.19
Antimony		ND		0.19
Barium		4.6		0.19
Beryllium		ND		0.19
Cadmium		ND		0.19
Chromium		30		0.19
Cobalt		5.0		0.19
Copper		3.0		0.19
Lead		9.5		0.19
Molybdenum		ND		0.19
Nickel		35		0.19
Selenium		ND		0.47
Silver		ND		0.19
Thallium		ND		0.19
Vanadium		15		0.19
Zinc		13		0.47

7471A Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)

Method:	7471A	Analysis Batch: 720-10331	Instrument ID:	FIMS 100
Preparation:	7471A	Prep Batch: 720-10294	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	1.01 g
Date Analyzed:	06/26/2006 0859		Final Weight/Volume:	50 mL
Date Prepared:	06/23/2006 1516			

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Mercury		ND		0.053

Client: Erler & Kalinowski, Inc. | Job Number: 720-4215-1

General Chemistry

Client Sample ID: 937SB114 [1.5]

Lab Sample ID: 720-4215-1 | Date Sampled: 06/20/2006 1700
Client Matrix: Solid | Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	9.9		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313			

Client Sample ID: 937SB115 [2]

Lab Sample ID: 720-4215-2 | Date Sampled: 06/20/2006 1708
Client Matrix: Solid | Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	17		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313			

Client Sample ID: 937SB112 [2]

Lab Sample ID: 720-4215-3 | Date Sampled: 06/21/2006 1025
Client Matrix: Solid | Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	7.4		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313			

Client Sample ID: 937SB112 [2] DUP

Lab Sample ID: 720-4215-4 | Date Sampled: 06/21/2006 1025
Client Matrix: Solid | Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	7.4		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10620	Date Analyzed	07/05/2006 0752			

General Chemistry

Client Sample ID: 937SB129 [2]

Lab Sample ID: 720-4215-5 Date Sampled: 06/21/2006 1045
Client Matrix: Solid Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	17		%	0.10	1.0	PercentMoisture
Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313				

Client Sample ID: 937SB129 [2] DUP

Lab Sample ID: 720-4215-6 Date Sampled: 06/21/2006 1045
Client Matrix: Solid Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	17		%	0.10	1.0	PercentMoisture
Anly Batch: 720-10620	Date Analyzed	07/05/2006 0752				

Client Sample ID: 937SB130 [2]

Lab Sample ID: 720-4215-7 Date Sampled: 06/21/2006 1215
Client Matrix: Solid Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	8.5		%	0.10	1.0	PercentMoisture
Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313				

Client Sample ID: 937SB110 [2]

Lab Sample ID: 720-4215-8 Date Sampled: 06/21/2006 1315
Client Matrix: Solid Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	17		%	0.10	1.0	PercentMoisture
Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313				

General Chemistry

Client Sample ID: 933SB103 [2.5]

Lab Sample ID: 720-4215-9 Date Sampled: 06/21/2006 1505
Client Matrix: Solid Date Received: 06/21/2006 1910

Analyte	Result	Qual	Units	RL	Dil	Method
Percent Moisture	6.1		%	0.10	1.0	PercentMoisture
	Anly Batch: 720-10281	Date Analyzed	06/23/2006 1313			

DATA REPORTING QUALIFIERS

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Lab Section	Qualifier	Description
GC/MS VOA		
	X	Surrogate exceeds the control limits
GC Semi VOA		
	*	LCS or LCSD exceeds the control limits
	F	MS or MSD exceeds the control limits
Metals		
	F	MS or MSD exceeds the control limits

Client: Erler & Kalinowski, Inc. | Job Number: 720-4215-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:720-10402					
LCS 720-10456/1-A	Lab Control Spike	T	Solid	8260B	720-10456
LCSD 720-10456/2-A	Lab Control Spike Duplicate	T	Solid	8260B	720-10456
MB 720-10456/3-A	Method Blank	T	Solid	8260B	720-10456
720-4215-2	937SB115 [2]	T	Solid	8260B	720-10456
720-4215-3	937SB112 [2]	T	Solid	8260B	720-10456
720-4215-5	937SB129 [2]	T	Solid	8260B	720-10456
720-4215-6	937SB129 [2] DUP	T	Solid	8260B	720-10456
720-4215-7	937SB130 [2]	T	Solid	8260B	720-10456
720-4215-8	937SB110 [2]	T	Solid	8260B	720-10456
Analysis Batch:720-10415					
LCS 720-10457/1-A	Lab Control Spike	T	Solid	8260B	720-10457
LCSD 720-10457/2-A	Lab Control Spike Duplicate	T	Solid	8260B	720-10457
MB 720-10457/3-A	Method Blank	T	Solid	8260B	720-10457
720-4215-1	937SB114 [1.5]	T	Solid	8260B	720-10457
720-4215-4	937SB112 [2] DUP	T	Solid	8260B	720-10457
720-4215-9	933SB103 [2.5]	T	Solid	8260B	720-10457
Prep Batch: 720-10456					
LCS 720-10456/1-A	Lab Control Spike	T	Solid	5035	
LCSD 720-10456/2-A	Lab Control Spike Duplicate	T	Solid	5035	
MB 720-10456/3-A	Method Blank	T	Solid	5035	
720-4215-2	937SB115 [2]	T	Solid	5035	
720-4215-3	937SB112 [2]	T	Solid	5035	
720-4215-5	937SB129 [2]	T	Solid	5035	
720-4215-6	937SB129 [2] DUP	T	Solid	5035	
720-4215-7	937SB130 [2]	T	Solid	5035	
720-4215-8	937SB110 [2]	T	Solid	5035	
Prep Batch: 720-10457					
LCS 720-10457/1-A	Lab Control Spike	T	Solid	5035	
LCSD 720-10457/2-A	Lab Control Spike Duplicate	T	Solid	5035	
MB 720-10457/3-A	Method Blank	T	Solid	5035	
720-4215-1	937SB114 [1.5]	T	Solid	5035	
720-4215-4	937SB112 [2] DUP	T	Solid	5035	
720-4215-9	933SB103 [2.5]	T	Solid	5035	

Report Basis
T = Total

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC VOA					
Analysis Batch:720-11176					
LCS 720-11176/2	Lab Control Spike	T	Solid	8015B	
LCSD 720-11176/3	Lab Control Spike Duplicate	T	Solid	8015B	
MB 720-11176/1	Method Blank	T	Solid	8015B	
720-4215-9	933SB103 [2.5]	T	Solid	8015B	

Report Basis
T = Total

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC Semi VOA					
Prep Batch: 720-10212					
LCS 720-10212/2-A	Lab Control Spike	T	Solid	3550B	
LCSD 720-10212/3-A	Lab Control Spike Duplicate	T	Solid	3550B	
MB 720-10212/1-A	Method Blank	T	Solid	3550B	
720-4215-9	933SB103 [2.5]	T	Solid	3550B	
720-4215-9MS	Matrix Spike	T	Solid	3550B	
720-4215-9MSD	Matrix Spike Duplicate	T	Solid	3550B	
Analysis Batch:720-10492					
LCS 720-10212/2-A	Lab Control Spike	T	Solid	8015B	720-10212
LCSD 720-10212/3-A	Lab Control Spike Duplicate	T	Solid	8015B	720-10212
MB 720-10212/1-A	Method Blank	T	Solid	8015B	720-10212
720-4215-9	933SB103 [2.5]	T	Solid	8015B	720-10212
720-4215-9MS	Matrix Spike	T	Solid	8015B	720-10212
720-4215-9MSD	Matrix Spike Duplicate	T	Solid	8015B	720-10212

Report Basis
T = Total

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 580-8323					
LCS 580-8323/15-A	Lab Control Spike	T	Solid	3050B	
LCSD 580-8323/16-A	Lab Control Spike Duplicate	T	Solid	3050B	
LCSSRM 580-8323/17-A	LCS-Standard Reference Material	T	Solid	3050B	
MB 580-8323/14-A	Method Blank	T	Solid	3050B	
720-4215-9	933SB103 [2.5]	T	Solid	3050B	
720-4215-9DU	Duplicate	T	Solid	3050B	
720-4215-9MS	Matrix Spike	T	Solid	3050B	
720-4215-9MSD	Matrix Spike Duplicate	T	Solid	3050B	
Analysis Batch:580-8342					
LCS 580-8323/15-A	Lab Control Spike	T	Solid	6020	580-8323
LCSD 580-8323/16-A	Lab Control Spike Duplicate	T	Solid	6020	580-8323
LCSSRM 580-8323/17-A	LCS-Standard Reference Material	T	Solid	6020	580-8323
MB 580-8323/14-A	Method Blank	T	Solid	6020	580-8323
720-4215-9	933SB103 [2.5]	T	Solid	6020	580-8323
720-4215-9DU	Duplicate	T	Solid	6020	580-8323
720-4215-9MS	Matrix Spike	T	Solid	6020	580-8323
720-4215-9MSD	Matrix Spike Duplicate	T	Solid	6020	580-8323
Prep Batch: 720-10294					
LCS 720-10294/2-A	Lab Control Spike	T	Solid	7471A	
LCSD 720-10294/3-A	Lab Control Spike Duplicate	T	Solid	7471A	
MB 720-10294/1-A	Method Blank	T	Solid	7471A	
720-4208-A-8-C MS	Matrix Spike	T	Solid	7471A	
720-4208-A-8-D MSD	Matrix Spike Duplicate	T	Solid	7471A	
720-4215-9	933SB103 [2.5]	T	Solid	7471A	
Analysis Batch:720-10331					
LCS 720-10294/2-A	Lab Control Spike	T	Solid	7471A	720-10294
LCSD 720-10294/3-A	Lab Control Spike Duplicate	T	Solid	7471A	720-10294
MB 720-10294/1-A	Method Blank	T	Solid	7471A	720-10294
720-4208-A-8-C MS	Matrix Spike	T	Solid	7471A	720-10294
720-4208-A-8-D MSD	Matrix Spike Duplicate	T	Solid	7471A	720-10294
720-4215-9	933SB103 [2.5]	T	Solid	7471A	720-10294

Report Basis

T = Total

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:720-10281					
MB 720-10281/1	Method Blank	T	Solid	PercentMoisture	
720-4215-1	937SB114 [1.5]	T	Solid	PercentMoisture	
720-4215-2	937SB115 [2]	T	Solid	PercentMoisture	
720-4215-3	937SB112 [2]	T	Solid	PercentMoisture	
720-4215-5	937SB129 [2]	T	Solid	PercentMoisture	
720-4215-7	937SB130 [2]	T	Solid	PercentMoisture	
720-4215-8	937SB110 [2]	T	Solid	PercentMoisture	
720-4215-9	933SB103 [2.5]	T	Solid	PercentMoisture	
720-4215-9DU	Duplicate	T	Solid	PercentMoisture	
Analysis Batch:720-10620					
MB 720-10620/1	Method Blank	T	Solid	PercentMoisture	
720-4215-4	937SB112 [2] DUP	T	Solid	PercentMoisture	
720-4215-6	937SB129 [2] DUP	T	Solid	PercentMoisture	
720-4380-A-1 DU	Duplicate	T	Solid	PercentMoisture	

Report Basis
T = Total

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Method Blank - Batch: 720-10456

Method: 8260B
Preparation: 5035

Lab Sample ID: MB 720-10456/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/26/2006 1517
Date Prepared: 06/26/2006 1400

Analysis Batch: 720-10402
Prep Batch: 720-10456
Units: ug/Kg

Instrument ID: Agilent 75MSD
Lab File ID: 062606011.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		5.0
Dichlorobromomethane	ND		5.0
Bromobenzene	ND		5.0
Chlorobromomethane	ND		20
Bromoform	ND		5.0
Bromomethane	ND		10
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		5.0
sec-Butylbenzene	ND		5.0
tert-Butylbenzene	ND		5.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		5.0
Chlorobenzene	ND		5.0
Chloroethane	ND		10
Chloroform	ND		5.0
Chloromethane	ND		10
2-Chlorotoluene	ND		5.0
4-Chlorotoluene	ND		5.0
Chlorodibromomethane	ND		5.0
1,2-Dichlorobenzene	ND		5.0
1,3-Dichlorobenzene	ND		5.0
1,4-Dichlorobenzene	ND		5.0
1,3-Dichloropropane	ND		5.0
1,1-Dichloropropene	ND		5.0
1,2-Dibromo-3-Chloropropane	ND		50
Ethylene Dibromide	ND		5.0
Dibromomethane	ND		10
Dichlorodifluoromethane	ND		10
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethane	ND		5.0
1,1-Dichloroethene	ND		5.0
cis-1,2-Dichloroethene	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
trans-1,3-Dichloropropene	ND		5.0
Ethylbenzene	ND		5.0
Hexachlorobutadiene	ND		5.0
Isopropylbenzene	ND		5.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Method Blank - Batch: 720-10456

Method: 8260B
Preparation: 5035

Lab Sample ID: MB 720-10456/3-A	Analysis Batch: 720-10402	Instrument ID: Agilent 75MSD
Client Matrix: Solid	Prep Batch: 720-10456	Lab File ID: 062606011.D
Dilution: 1.0	Units: ug/Kg	Initial Weight/Volume: 5 g
Date Analyzed: 06/26/2006 1517		Final Weight/Volume: 10 mL
Date Prepared: 06/26/2006 1400		

Analyte	Result	Qual	RL
4-Isopropyltoluene	ND		5.0
Methylene Chloride	ND		10
methyl isobutyl ketone	ND		50
Naphthalene	ND		10
N-Propylbenzene	ND		5.0
Styrene	ND		5.0
1,1,1,2-Tetrachloroethane	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Tetrachloroethene	ND		5.0
Toluene	ND		5.0
1,2,3-Trichlorobenzene	ND		5.0
1,2,4-Trichlorobenzene	ND		5.0
1,1,1-Trichloroethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Trichloroethene	ND		5.0
Trichlorofluoromethane	ND		5.0
1,2,3-Trichloropropane	ND		5.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0
1,2,4-Trimethylbenzene	ND		5.0
1,3,5-Trimethylbenzene	ND		5.0
Vinyl acetate	ND		50
Vinyl chloride	ND		5.0
Xylenes, Total	ND		10
2,2-Dichloropropane	ND		5.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	114	60 - 140
1,2-Dichloroethane-d4 (Surr)	103	60 - 140
Toluene-d8 (Surr)	97	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. | Job Number: 720-4215-1

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-10456

Method: 8260B
Preparation: 5035

LCS Lab Sample ID: LCS 720-10456/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/26/2006 1426
Date Prepared: 06/26/2006 1400

Analysis Batch: 720-10402
Prep Batch: 720-10456
Units: ug/Kg

Instrument ID: Agilent 75MSD
Lab File ID: 062606009.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

LCSD Lab Sample ID: LCSD 720-10456/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/26/2006 1451
Date Prepared: 06/26/2006 1400

Analysis Batch: 720-10402
Prep Batch: 720-10456
Units: ug/Kg

Instrument ID: Agilent 75MSD
Lab File ID: 062606010.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	89	86	69 - 129	3	20		
Chlorobenzene	95	94	61 - 121	2	20		
1,1-Dichloroethene	93	90	65 - 125	3	20		
Toluene	95	91	70 - 130	4	20		
Trichloroethene	94	91	74 - 134	3	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	111	109	60 - 140
1,2-Dichloroethane-d4 (Surr)	93	90	60 - 140
Toluene-d8 (Surr)	91	88	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc. | Job Number: 720-4215-1

Method Blank - Batch: 720-10457

Method: 8260B
Preparation: 5035

Lab Sample ID:	MB 720-10457/3-A	Analysis Batch:	720-10415	Instrument ID:	Agilent 75MSD
Client Matrix:	Solid	Prep Batch:	720-10457	Lab File ID:	062706007.D
Dilution:	1.0	Units:	ug/Kg	Initial Weight/Volume:	5 g
Date Analyzed:	06/27/2006 1328			Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230				

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		5.0
Dichlorobromomethane	ND		5.0
Bromobenzene	ND		5.0
Chlorobromomethane	ND		20
Bromoform	ND		5.0
Bromomethane	ND		10
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		5.0
sec-Butylbenzene	ND		5.0
tert-Butylbenzene	ND		5.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		5.0
Chlorobenzene	ND		5.0
Chloroethane	ND		10
Chloroform	ND		5.0
Chloromethane	ND		10
2-Chlorotoluene	ND		5.0
4-Chlorotoluene	ND		5.0
Chlorodibromomethane	ND		5.0
1,2-Dichlorobenzene	ND		5.0
1,3-Dichlorobenzene	ND		5.0
1,4-Dichlorobenzene	ND		5.0
1,3-Dichloropropane	ND		5.0
1,1-Dichloropropene	ND		5.0
1,2-Dibromo-3-Chloropropane	ND		50
Ethylene Dibromide	ND		5.0
Dibromomethane	ND		10
Dichlorodifluoromethane	ND		10
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethane	ND		5.0
1,1-Dichloroethene	ND		5.0
cis-1,2-Dichloroethene	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
trans-1,3-Dichloropropene	ND		5.0
Ethylbenzene	ND		5.0
Hexachlorobutadiene	ND		5.0
Isopropylbenzene	ND		5.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Method Blank - Batch: 720-10457

Method: 8260B
Preparation: 5035

Lab Sample ID: MB 720-10457/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/27/2006 1328
Date Prepared: 06/27/2006 1230

Analysis Batch: 720-10415
Prep Batch: 720-10457
Units: ug/Kg

Instrument ID: Agilent 75MSD
Lab File ID: 062706007.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
4-Isopropyltoluene	ND		5.0
Methylene Chloride	ND		10
methyl isobutyl ketone	ND		50
Naphthalene	ND		10
N-Propylbenzene	ND		5.0
Styrene	ND		5.0
1,1,1,2-Tetrachloroethane	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Tetrachloroethene	ND		5.0
Toluene	ND		5.0
1,2,3-Trichlorobenzene	ND		5.0
1,2,4-Trichlorobenzene	ND		5.0
1,1,1-Trichloroethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Trichloroethene	ND		5.0
Trichlorofluoromethane	ND		5.0
1,2,3-Trichloropropane	ND		5.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0
1,2,4-Trimethylbenzene	ND		5.0
1,3,5-Trimethylbenzene	ND		5.0
Vinyl acetate	ND		50
Vinyl chloride	ND		5.0
Xylenes, Total	ND		10
2,2-Dichloropropane	ND		5.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	112	60 - 140
1,2-Dichloroethane-d4 (Surr)	99	60 - 140
Toluene-d8 (Surr)	96	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-10457

Method: 8260B
Preparation: 5035

LCS Lab Sample ID:	LCS 720-10457/1-A	Analysis Batch:	720-10415	Instrument ID:	Agilent 75MSD
Client Matrix:	Solid	Prep Batch:	720-10457	Lab File ID:	062706005.D
Dilution:	1.0	Units:	ug/Kg	Initial Weight/Volume:	5 g
Date Analyzed:	06/27/2006 1237			Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230				

LCSD Lab Sample ID:	LCSD 720-10457/2-A	Analysis Batch:	720-10415	Instrument ID:	Agilent 75MSD
Client Matrix:	Solid	Prep Batch:	720-10457	Lab File ID:	062706006.D
Dilution:	1.0	Units:	ug/Kg	Initial Weight/Volume:	5 g
Date Analyzed:	06/27/2006 1303			Final Weight/Volume:	10 mL
Date Prepared:	06/27/2006 1230				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	88	86	69 - 129	2	20		
Chlorobenzene	92	91	61 - 121	1	20		
1,1-Dichloroethene	89	88	65 - 125	1	20		
Toluene	91	89	70 - 130	2	20		
Trichloroethene	86	85	74 - 134	1	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	104	103	60 - 140
1,2-Dichloroethane-d4 (Surr)	92	89	60 - 140
Toluene-d8 (Surr)	87	86	70 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Method Blank - Batch: 720-11176

Method: 8015B
Preparation: 5030B

Lab Sample ID: MB 720-11176/1	Analysis Batch: 720-11176	Instrument ID:	GC 5
Client Matrix: Solid	Prep Batch: N/A	Lab File ID:	N/A
Dilution: 1.0	Units: mg/Kg	Initial Weight/Volume:	5.0 g
Date Analyzed: 06/30/2006 1233		Final Weight/Volume:	10 mL
Date Prepared: 06/30/2006 1233		Injection Volume:	
		Column ID:	PRIMARY

Analyte	Result	Qual	RL
Gasoline Range Organics (GRO)-C7-C12	ND		0.40

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	97	58 - 124

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-11176

Method: 8015B
Preparation: 5030B

LCS Lab Sample ID: LCS 720-11176/2	Analysis Batch: 720-11176	Instrument ID:	GC 5
Client Matrix: Solid	Prep Batch: N/A	Lab File ID:	N/A
Dilution: 1.0	Units: mg/Kg	Initial Weight/Volume:	5.0 g
Date Analyzed: 06/30/2006 1259		Final Weight/Volume:	10 mL
Date Prepared: 06/30/2006 1259		Injection Volume:	
		Column ID:	PRIMARY

LCSD Lab Sample ID: LCSD 720-11176/3	Analysis Batch: 720-11176	Instrument ID:	GC 5
Client Matrix: Solid	Prep Batch: N/A	Lab File ID:	N/A
Dilution: 1.0	Units: mg/Kg	Initial Weight/Volume:	5.0 g
Date Analyzed: 06/30/2006 1326		Final Weight/Volume:	10 mL
Date Prepared: 06/30/2006 1326		Injection Volume:	
		Column ID:	PRIMARY

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Gasoline Range Organics (GRO)-C7-C12	111	99	75 - 125	12	35		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	80	67	58 - 124

Calculations are performed before rounding to avoid round-off errors in calculated results.

Method Blank - Batch: 720-10212

Method: 8015B
Preparation: 3550B

Lab Sample ID: MB 720-10212/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/22/2006 1519
Date Prepared: 06/22/2006 1034

Analysis Batch: 720-10492
Prep Batch: 720-10212
Units: mg/Kg

Instrument ID: HP DRO5
Lab File ID: N/A
Initial Weight/Volume: 30.06 g
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL
Diesel Range Organics [C12-C24]	ND		1.0

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	77	60 - 130

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-10212

Method: 8015B
Preparation: 3550B

LCS Lab Sample ID: LCS 720-10212/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/22/2006 1708
Date Prepared: 06/22/2006 1034

Analysis Batch: 720-10492
Prep Batch: 720-10212
Units: mg/Kg

Instrument ID: HP DRO5
Lab File ID: N/A
Initial Weight/Volume: 30.20 g
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

LCSD Lab Sample ID: LCSD 720-10212/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/22/2006 1735
Date Prepared: 06/22/2006 1034

Analysis Batch: 720-10492
Prep Batch: 720-10212
Units: mg/Kg

Instrument ID: HP DRO5
Lab File ID: N/A
Initial Weight/Volume: 30.05 g
Final Weight/Volume: 5 mL
Injection Volume:
Column ID: PRIMARY

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Diesel Range Organics [C12-C24]	91	66	60 - 130	31	30		*

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	96	74	60 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-10212

Method: 8015B
Preparation: 3550B

MS Lab Sample ID:	720-4215-9	Analysis Batch:	720-10492	Instrument ID:	HP DRO5
Client Matrix:	Solid	Prep Batch:	720-10212	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	30.16 g
Date Analyzed:	06/23/2006 1800			Final Weight/Volume:	5 mL
Date Prepared:	06/22/2006 1034			Injection Volume:	
				Column ID:	PRIMARY

MSD Lab Sample ID:	720-4215-9	Analysis Batch:	720-10492	Instrument ID:	HP DRO5
Client Matrix:	Solid	Prep Batch:	720-10212	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	30.25 g
Date Analyzed:	06/23/2006 1828			Final Weight/Volume:	5 mL
Date Prepared:	06/22/2006 1034			Injection Volume:	
				Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Diesel Range Organics [C12-C24]	58	64	60 - 130	7	30	F	

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	93	96	60 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. | Job Number: 720-4215-1

Method Blank - Batch: 580-8323

Method: 6020
Preparation: 3050B

Lab Sample ID: MB 580-8323/14-A	Analysis Batch: 580-8342	Instrument ID: SEA026
Client Matrix: Solid	Prep Batch: 580-8323	Lab File ID: N/A
Dilution: 1.0	Units: mg/Kg	Initial Weight/Volume: 0.5 g
Date Analyzed: 06/26/2006 1238		Final Weight/Volume: 50 mL
Date Prepared: 06/26/2006 1050		

Analyte	Result	Qual	RL
Arsenic	ND		0.040
Antimony	ND		0.040
Barium	ND		0.040
Beryllium	ND		0.040
Cadmium	ND		0.040
Chromium	ND		0.040
Cobalt	ND		0.040
Copper	ND		0.040
Lead	ND		0.040
Molybdenum	ND		0.040
Nickel	ND		0.040
Selenium	ND		0.10
Silver	ND		0.040
Thallium	ND		0.040
Vanadium	ND		0.040
Zinc	ND		0.10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 580-8323

Method: 6020
Preparation: 3050B

LCS Lab Sample ID: LCS 580-8323/15-A	Analysis Batch: 580-8342	Instrument ID: SEA026	
Client Matrix: Solid	Prep Batch: 580-8323	Lab File ID: N/A	
Dilution: 50	Units: mg/Kg	Initial Weight/Volume:	0.5 g
Date Analyzed: 06/26/2006 1319		Final Weight/Volume:	50 mL
Date Prepared: 06/26/2006 1050			

LCSD Lab Sample ID: LCSD 580-8323/16-A	Analysis Batch: 580-8342	Instrument ID: SEA026	
Client Matrix: Solid	Prep Batch: 580-8323	Lab File ID: N/A	
Dilution: 50	Units: mg/Kg	Initial Weight/Volume:	0.5 g
Date Analyzed: 06/26/2006 1324		Final Weight/Volume:	50 mL
Date Prepared: 06/26/2006 1050			

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Arsenic	96	97	80 - 120	1	35		
Antimony	80	80	80 - 120	0	35		
Barium	97	96	80 - 120	1	35		
Beryllium	94	93	80 - 120	1	35		
Cadmium	92	87	80 - 120	5	35		
Chromium	98	101	80 - 120	3	35		
Cobalt	100	101	80 - 120	1	35		
Copper	98	99	80 - 120	1	35		
Lead	101	101	80 - 120	0	35		
Molybdenum	96	98	80 - 120	2	35		
Nickel	99	99	80 - 120	1	35		
Selenium	97	98	80 - 120	1	35		
Silver	93	94	80 - 120	1	35		
Thallium	99	97	80 - 120	1	35		
Vanadium	99	101	80 - 120	2	35		
Zinc	96	96	80 - 120	0	35		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-8323

Method: 6020
Preparation: 3050B

MS Lab Sample ID: 720-4215-9
Client Matrix: Solid
Dilution: 50
Date Analyzed: 06/26/2006 1303
Date Prepared: 06/26/2006 1050

Analysis Batch: 580-8342
Prep Batch: 580-8323

Instrument ID: SEA026
Lab File ID: N/A
Initial Weight/Volume: 0.5145 g
Final Weight/Volume: 50 mL

MSD Lab Sample ID: 720-4215-9
Client Matrix: Solid
Dilution: 50
Date Analyzed: 06/26/2006 1308
Date Prepared: 06/26/2006 1050

Analysis Batch: 580-8342
Prep Batch: 580-8323

Instrument ID: SEA026
Lab File ID: N/A
Initial Weight/Volume: 0.5523 g
Final Weight/Volume: 50 mL

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Arsenic	94	100	75 - 125	0	35		
Antimony	80	87	75 - 125	1	35		
Barium	94	102	75 - 125	1	35		
Beryllium	93	95	75 - 125	5	35		
Cadmium	89	95	75 - 125	0	35		
Chromium	92	102	75 - 125	1	35		
Cobalt	96	102	75 - 125	1	35		
Copper	96	101	75 - 125	1	35		
Lead	99	105	75 - 125	2	35		
Molybdenum	93	100	75 - 125	1	35		
Nickel	96	103	75 - 125	0	35		
Selenium	93	97	75 - 125	2	35		
Silver	92	97	75 - 125	1	35		
Thallium	96	102	75 - 125	1	35		
Vanadium	95	100	75 - 125	2	35		
Zinc	92	98	75 - 125	1	35		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc.

Job Number: 720-4215-1

Duplicate - Batch: 580-8323

Method: 6020
Preparation: 3050B

Lab Sample ID: 720-4215-9
Client Matrix: Solid
Dilution: 5.0
Date Analyzed: 06/26/2006 1253
Date Prepared: 06/26/2006 1050

Analysis Batch: 580-8342
Prep Batch: 580-8323
Units: mg/Kg

Instrument ID: SEA026
Lab File ID: N/A
Initial Weight/Volume: 0.5930 g
Final Weight/Volume: 50 mL

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Arsenic	1.74	1.80	3	35	
Antimony	0.121	0.0983	21	35	
Barium	4.64	4.46	4	35	
Beryllium	0.0823	0.0812	1	35	
Cadmium	0.000935	-0.00224	NC	35	
Chromium	30.0	29.1	3	35	
Cobalt	4.98	4.82	3	35	
Copper	2.96	2.94	1	35	
Lead	9.48	9.16	3	35	
Molybdenum	0.143	0.107	28	35	
Nickel	35.1	34.6	1	35	
Selenium	0.0599	0.0449	NC	35	
Silver	0.137	0.0745	59	35	
Thallium	0.0164	0.0175	7	35	
Vanadium	14.9	14.5	3	35	
Zinc	12.6	12.7	1	35	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Method Blank - Batch: 720-10294

Method: 7471A
Preparation: 7471A

Lab Sample ID: MB 720-10294/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/26/2006 0849
Date Prepared: 06/23/2006 1516

Analysis Batch: 720-10331
Prep Batch: 720-10294
Units: mg/Kg

Instrument ID: FIMS 100
Lab File ID: N/A
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 50 mL

Analyte	Result	Qual	RL
Mercury	ND		0.050

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-10294

Method: 7471A
Preparation: 7471A

LCS Lab Sample ID: LCS 720-10294/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/26/2006 0850
Date Prepared: 06/23/2006 1516

Analysis Batch: 720-10331
Prep Batch: 720-10294
Units: mg/Kg

Instrument ID: FIMS 100
Lab File ID: N/A
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 50 mL

LCSD Lab Sample ID: LCSD 720-10294/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/26/2006 0851
Date Prepared: 06/23/2006 1516

Analysis Batch: 720-10331
Prep Batch: 720-10294
Units: mg/Kg

Instrument ID: FIMS 100
Lab File ID: N/A
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 50 mL

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Mercury	104	100	85 - 115	4	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc. | Job Number: 720-4215-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-10294

Method: 7471A
Preparation: 7471A

MS Lab Sample ID: 720-4208-A-8-C MS	Analysis Batch: 720-10331	Instrument ID: FIMS 100	
Client Matrix: Solid	Prep Batch: 720-10294	Lab File ID: N/A	
Dilution: 1.0		Initial Weight/Volume: 1.00 g	
Date Analyzed: 06/26/2006 0854		Final Weight/Volume: 50 mL	
Date Prepared: 06/23/2006 1516			

MSD Lab Sample ID: 720-4208-A-8-D MSD	Analysis Batch: 720-10331	Instrument ID: FIMS 100	
Client Matrix: Solid	Prep Batch: 720-10294	Lab File ID: N/A	
Dilution: 1.0		Initial Weight/Volume: 1.05 g	
Date Analyzed: 06/26/2006 0855		Final Weight/Volume: 50 mL	
Date Prepared: 06/23/2006 1516			

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Mercury	117	115	85 - 115	6	20	F	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Method Blank - Batch: 720-10281

Method: PercentMoisture
Preparation: N/A

Lab Sample ID: MB 720-10281/1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/23/2006 1313
Date Prepared: N/A

Analysis Batch: 720-10281
Prep Batch: N/A
Units: %

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume:

Analyte	Result	Qual	RL
Percent Moisture	ND		0.10

Duplicate - Batch: 720-10281

Method: PercentMoisture
Preparation: N/A

Lab Sample ID: 720-4215-9
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 06/23/2006 1313
Date Prepared: N/A

Analysis Batch: 720-10281
Prep Batch: N/A
Units: %

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume:

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	6.1	6.5			

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc.

Job Number: 720-4215-1

Method Blank - Batch: 720-10620

Method: PercentMoisture
Preparation: N/A

Lab Sample ID: MB 720-10620/1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/05/2006 0752
Date Prepared: N/A

Analysis Batch: 720-10620
Prep Batch: N/A
Units: %

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume:

Analyte	Result	Qual	RL
Percent Moisture	ND		0.10

Duplicate - Batch: 720-10620

Method: PercentMoisture
Preparation: N/A

Lab Sample ID: 720-4380-A-1 DU
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/05/2006 0752
Date Prepared: N/A

Analysis Batch: 720-10620
Prep Batch: N/A
Units: %

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume:
Final Weight/Volume:

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	12	13			

Calculations are performed before rounding to avoid round-off errors in calculated results.

720-4215

400509

Erler & Kalinowski, Inc. CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

PAGE 1 OF 2

EKI COC No.: 3

Revision: ______ (A, B, C, D, etc.)

Project Name: Presidio

Project No.: A000003.08

Location: Building 937

Sampled By: Z. Maliga

Reporting: (circle all that apply)
Hard Copy Format: PDF
Electronic Format: EDF (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III/IV (See Remarks)

Laboratory: (Address/Phone No./Contact Person)
Attn: Dimple Sharma
STL San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919
Fax: 925-484-1096

Report results to (email or fax no.):
(1) mkking@ekiconsult.com (Michelle King)
(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	VOCs (EPA 8260B)	Title 22 Metals (EPA 6020)	TPH-D (EPA 8015M)	TPH-G (EPA 8015M)	% moisture				EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937SB114[CLS]	1	6/20/06	17:00	SOIL	3 ENCORES	x										STD	Level III
"		"	"		1 jar					X							
937SB115[2]	2	6/20/06	17:08		3encores	X											
"		"	"		1jar					X							
937SB112[2]	3	6/21/06	10:25		3encores	X											
"		"	"		1jar					X							
937SB112[2]DUP	4	6/21/06	10:25		3encores	X											
937SB129[2]	5	6/21/06	10:45		3encores	X											
"		"			liner					X							
937SB129[2]DUP	6	6/21/06	10:45		3encores	X											
937SB130[2]	7	6/21/06	12:15		3encores	X											

Special Instructions/Notes:

TEMP. 2°C

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Z. Maliga	6/21/06	17:00	STL-SF 1700
Relinquished by: (Signature/Affiliation) 6/21/06	Date	Time 19:10	Received by: (Signature/Affiliation) STL-SF 6/21/06
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)

Erler & Kalinowski, Inc. CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

720-4215

PAGE 2 OF 2

1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: Presidio
Project No.: A000003.06
Location: Building 937
Sampled By: Z. Maliga
Reporting: (circle all that apply)
Hard Copy Format: PDF
Electronic Format: EDF (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III/IV (See Remarks)
Laboratory: (Address/Phone No./Contact Person)
Attn: Dimple Sharma
STL San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919
Fax: 925-484-1096
Report results to (email or fax no.):
(1) mkking@ekiconsult.com (Michelle King)
(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

EKI COC No.: 3
Revision: ____ (A, B, C, D, etc.)

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	VOCs (EPA 8260B)	Title 22 Metals (EPA 6020)	TPH-D (EPA 8015M)	TPH-G (EPA 8015M)	% moisture				EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937SB130[2]	7	6/21/06	12:15	SOIL	1 liner ~~3 ENCORES~~	22mk				X						STD	Level III
937SB110[2]	8		13:15		3 encores												
"			"		1 jar												
937SB103[2.5]	9		15:05		6 encores	X			X								Level IV
"			"		1 liner		X	X		X							"

Special Instructions/Notes:

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Z. Maliga	6/21/06	17:00	STL-SF 1766
STL-SF	6/21/06	19:10	DNaidoo STL-SF

LOGIN SAMPLE RECEIPT CHECK LIST

Client: Erler & Kalinowski, Inc. Job Number: 720-4215-1

Login Number: 4215

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	False	Rec'd 1-soil liner 933SB103[2] 6/21 @ 15:10 not listed on the COC; see receipt
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	SB110 [2] date 6/21/06; SB103 [2.5] date :6/21/06
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

ANALYTICAL REPORT

Job Number: 720-4217-1

Job Description: Presidio 937 Marine drive/Bldg. 937

For:
Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010

Attention: Mr. Adam Abeles

Afsaneh Salimpour
Project Manager I
asalimpour@stl-inc.com
06/27/2006
Revision: 1

cc: Mr. John Dewitt
Mr. Nina Pozdnyakova

Project Manager: Afsaneh Salimpour

Severn Trent Laboratories, Inc.
STL San Francisco 1220 Quarry Lane, Pleasanton, CA 94566
Tel (925) 484-1919 Fax (925) 484-1096 www.stl-inc.com

EXECUTIVE SUMMARY - Detections

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-4217-1	**937SB112**				
Tetrachloroethene		6.3	0.50	ug/L	8260B
720-4217-2	**937SB112 DUP**				
Tetrachloroethene		5.9	0.50	ug/L	8260B
720-4217-3	**937SB130**				
Dichlorobromomethane		0.61	0.50	ug/L	8260B
Chloroform		2.4	1.0	ug/L	8260B

METHOD SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds by GC/MS (Low Level)	STL-SF	SW846 8260B	
Purge-and-Trap	STL-SF		SW846 5030B

LAB REFERENCES:

STL-SF = STL-San Francisco

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Method	Analyst	Analyst ID
SW846 8260B	Chen, Amy	AC

SAMPLE SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-4217-1	937SB112	Water	06/21/2006 1100	06/21/2006 1910
720-4217-2	937SB112 DUP	Water	06/21/2006 1110	06/21/2006 1910
720-4217-3	937SB130	Water	06/21/2006 1130	06/21/2006 1910
720-4217-4	937SB129	Water	06/21/2006 1115	06/21/2006 1910
720-4217-5	937SB129 DUP	Water	06/21/2006 1115	06/21/2006 1910
720-4217-6TB	TB2	Water	06/21/2006 0945	06/21/2006 1910
720-4217-7	937SB110	Water	06/21/2006 1430	06/21/2006 1910
720-4217-8	933SB103	Water	06/21/2006 1530	06/21/2006 1910
720-4217-9	937SB118	Water	06/21/2006 1350	06/21/2006 1910
720-4217-10	937SB117	Water	06/21/2006 1420	06/21/2006 1910

Client: Erler & Kalinowski, Inc. | Job Number: 720-4217-1

Client Sample ID: 937SB112

Lab Sample ID: 720-4217-1 | Date Sampled: 06/21/2006 1100
Client Matrix: Water | Date Received: 06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method: 8260B | Analysis Batch: 720-10236 | Instrument ID: Varian 3900F
Preparation: 5030B | Lab File ID: c:\saturnws\data\200606\06
Dilution: 1.0 | Initial Weight/Volume: 40 mL
Date Analyzed: 06/22/2006 1255 | Final Weight/Volume: 40 mL
Date Prepared: 06/22/2006 1255

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB112

Lab Sample ID:	720-4217-1	Date Sampled:	06/21/2006 1100
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID: Varian 3900F
Preparation:	5030B		Lab File ID: c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume: 40 mL
Date Analyzed:	06/22/2006 1255		Final Weight/Volume: 40 mL
Date Prepared:	06/22/2006 1255		

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	6.3		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	98	79 - 118
1,2-Dichloroethane-d4	108	78 - 117
Toluene-d8	109	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB112 DUP

Lab Sample ID:	720-4217-2	Date Sampled:	06/21/2006 1110
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1329		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1329			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB112 DUP

Lab Sample ID:	720-4217-2	Date Sampled:	06/21/2006 1110
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1329		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1329			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	5.9		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	101	79 - 118
1,2-Dichloroethane-d4	111	78 - 117
Toluene-d8	112	77 - 121

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB130

Lab Sample ID:	720-4217-3	Date Sampled:	06/21/2006 1130
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1616		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1616			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	0.61		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	2.4		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB130

Lab Sample ID:	720-4217-3	Date Sampled:	06/21/2006 1130
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1616		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1616			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	99	79 - 118
1,2-Dichloroethane-d4	110	78 - 117
Toluene-d8	100	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB129

Lab Sample ID:	720-4217-4	Date Sampled:	06/21/2006 1115
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1650		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1650			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB129

Lab Sample ID:	720-4217-4	Date Sampled:	06/21/2006 1115
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1650		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1650			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	100	79 - 118
1,2-Dichloroethane-d4	112	78 - 117
Toluene-d8	103	77 - 121

Analytical Data

Client: Erler & Kalinowski, Inc.

Job Number: 720-4217-1

Client Sample ID: 937SB129 DUP

Lab Sample ID:	720-4217-5	Date Sampled:	06/21/2006 1115
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1723		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1723			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. | Job Number: 720-4217-1

Client Sample ID: 937SB129 DUP

Lab Sample ID:	720-4217-5	Date Sampled:	06/21/2006 1115
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1723		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1723			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	101	79 - 118
1,2-Dichloroethane-d4	110	78 - 117
Toluene-d8	103	77 - 121

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: TB2

Lab Sample ID:	720-4217-6TB	Date Sampled:	06/21/2006 0945
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1222		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1222			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: TB2

Lab Sample ID:	720-4217-6TB	Date Sampled:	06/21/2006 0945
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1222		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1222			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	101	79 - 118
1,2-Dichloroethane-d4	110	78 - 117
Toluene-d8	105	77 - 121

Analytical Data

Client: Erler & Kalinowski, Inc. | Job Number: 720-4217-1

Client Sample ID: 937SB110

Lab Sample ID:	720-4217-7	Date Sampled:	06/21/2006 1430
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1757		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1757			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: **937SB110**

Lab Sample ID:	720-4217-7	Date Sampled:	06/21/2006 1430
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1757		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1757			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	102	79 - 118
1,2-Dichloroethane-d4	112	78 - 117
Toluene-d8	104	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 933SB103

Lab Sample ID:	720-4217-8	Date Sampled:	06/21/2006 1530
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1830		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1830			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 933SB103

Lab Sample ID:	720-4217-8	Date Sampled:	06/21/2006 1530
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1830		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1830			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	96	79 - 118
1,2-Dichloroethane-d4	108	78 - 117
Toluene-d8	100	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB118

Lab Sample ID:	720-4217-9	Date Sampled:	06/21/2006 1350
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1903		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1903			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc.

Job Number: 720-4217-1

Client Sample ID: 937SB118

Lab Sample ID:	720-4217-9	Date Sampled:	06/21/2006 1350
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1903		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1903			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	102	79 - 118
1,2-Dichloroethane-d4	111	78 - 117
Toluene-d8	105	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB117

Lab Sample ID:	720-4217-10	Date Sampled:	06/21/2006 1420
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1937		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1937			

Analyte	Result (ug/L)	Qualifier	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Client Sample ID: 937SB117

Lab Sample ID:	720-4217-10	Date Sampled:	06/21/2006 1420
Client Matrix:	Water	Date Received:	06/21/2006 1910

8260B Volatile Organic Compounds by GC/MS (Low Level)

Method:	8260B	Analysis Batch: 720-10236	Instrument ID:	Varian 3900F
Preparation:	5030B		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0		Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1937		Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1937			

Analyte	Result (ug/L)	Qualifier	RL
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	101	79 - 118
1,2-Dichloroethane-d4	108	78 - 117
Toluene-d8	107	77 - 121

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
GC/MS VOA				
Analysis Batch:720-10236				
LCS 720-10236/7	Lab Control Spike	Water	8260B	
LCSD 720-10236/8	Lab Control Spike Duplicate	Water	8260B	
MB 720-10236/9	Method Blank	Water	8260B	
720-4217-1	937SB112	Water	8260B	
720-4217-1MS	Matrix Spike	Water	8260B	
720-4217-1MSD	Matrix Spike Duplicate	Water	8260B	
720-4217-2	937SB112 DUP	Water	8260B	
720-4217-3	937SB130	Water	8260B	
720-4217-4	937SB129	Water	8260B	
720-4217-5	937SB129 DUP	Water	8260B	
720-4217-6TB	TB2	Water	8260B	
720-4217-7	937SB110	Water	8260B	
720-4217-8	933SB103	Water	8260B	
720-4217-9	937SB118	Water	8260B	
720-4217-10	937SB117	Water	8260B	

Client: Erler & Kalinowski, Inc.   Job Number: 720-4217-1

Method Blank - Batch: 720-10236

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 720-10236/9
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/22/2006 1115
Date Prepared: 06/22/2006 1115

Analysis Batch: 720-10236
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900F
Lab File ID: c:\saturnws\data\200606\0(
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

Analyte	Result	Qual	RL
Methyl tert-butyl ether	ND		5.0
Acetone	ND		50
Benzene	ND		0.50
Dichlorobromomethane	ND		0.50
Bromobenzene	ND		1.0
Chlorobromomethane	ND		1.0
Bromoform	ND		1.0
Bromomethane	ND		1.0
Methyl Ethyl Ketone	ND		50
n-Butylbenzene	ND		1.0
sec-Butylbenzene	ND		1.0
tert-Butylbenzene	ND		1.0
Carbon disulfide	ND		5.0
Carbon tetrachloride	ND		0.50
Chlorobenzene	ND		0.50
Chloroethane	ND		1.0
Chloroform	ND		1.0
Chloromethane	ND		1.0
2-Chlorotoluene	ND		0.50
4-Chlorotoluene	ND		0.50
Chlorodibromomethane	ND		0.50
1,2-Dichlorobenzene	ND		0.50
1,3-Dichlorobenzene	ND		0.50
1,4-Dichlorobenzene	ND		0.50
1,3-Dichloropropane	ND		1.0
1,1-Dichloropropene	ND		0.50
1,2-Dibromo-3-Chloropropane	ND		1.0
Ethylene Dibromide	ND		0.50
Dibromomethane	ND		0.50
Dichlorodifluoromethane	ND		0.50
1,1-Dichloroethane	ND		0.50
1,2-Dichloroethane	ND		0.50
1,1-Dichloroethene	ND		0.50
cis-1,2-Dichloroethene	ND		0.50
trans-1,2-Dichloroethene	ND		0.50
1,2-Dichloropropane	ND		0.50
cis-1,3-Dichloropropene	ND		0.50
trans-1,3-Dichloropropene	ND		0.50
Ethylbenzene	ND		0.50
Hexachlorobutadiene	ND		1.0
Isopropylbenzene	ND		0.50

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. | Job Number: 720-4217-1

Method Blank - Batch: 720-10236

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 720-10236/9
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 06/22/2006 1115
Date Prepared: 06/22/2006 1115

Analysis Batch: 720-10236
Prep Batch: N/A
Units: ug/L

Instrument ID: Varian 3900F
Lab File ID: c:\saturnws\data\200606\06
Initial Weight/Volume: 40 mL
Final Weight/Volume: 40 mL

Analyte	Result	Qual	RL
4-Isopropyltoluene	ND		1.0
Methylene Chloride	ND		5.0
methyl isobutyl ketone	ND		50
Naphthalene	ND		1.0
N-Propylbenzene	ND		1.0
Styrene	ND		0.50
1,1,1,2-Tetrachloroethane	ND		0.50
1,1,2,2-Tetrachloroethane	ND		0.50
Tetrachloroethene	ND		0.50
Toluene	ND		0.50
1,2,3-Trichlorobenzene	ND		1.0
1,2,4-Trichlorobenzene	ND		1.0
1,1,1-Trichloroethane	ND		0.50
1,1,2-Trichloroethane	ND		0.50
Trichloroethene	ND		0.50
Trichlorofluoromethane	ND		1.0
1,2,3-Trichloropropane	ND		0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50
1,2,4-Trimethylbenzene	ND		0.50
1,3,5-Trimethylbenzene	ND		0.50
Vinyl acetate	ND		50
Vinyl chloride	ND		0.50
Xylenes, Total	ND		1.0
2,2-Dichloropropane	ND		0.50

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	101	79 - 118
1,2-Dichloroethane-d4	108	78 - 117
Toluene-d8	106	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-10236

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID:	LCS 720-10236/7	Analysis Batch:	720-10236	Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1008			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1008				

LCSD Lab Sample ID:	LCSD 720-10236/8	Analysis Batch:	720-10236	Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	c:\saturnws\data\200606\062
Dilution:	1.0	Units:	ug/L	Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1042			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1042				

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	97	101	69 - 129	5	20		
Chlorobenzene	102	106	61 - 121	4	20		
1,1-Dichloroethene	86	91	65 - 125	6	20		
Toluene	103	103	70 - 130	1	20		
Trichloroethene	91	95	74 - 134	4	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	96	101	79 - 118
1,2-Dichloroethane-d4	103	109	78 - 117
Toluene-d8	112	109	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4217-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-10236

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	720-4217-1	Analysis Batch:	720-10236	Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	c:\saturnws\data\200606\(
Dilution:	1.0			Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1402			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1402				

MSD Lab Sample ID:	720-4217-1	Analysis Batch:	720-10236	Instrument ID:	Varian 3900F
Client Matrix:	Water	Prep Batch: N/A		Lab File ID:	c:\saturnws\data\200606\06
Dilution:	1.0			Initial Weight/Volume:	40 mL
Date Analyzed:	06/22/2006 1436			Final Weight/Volume:	40 mL
Date Prepared:	06/22/2006 1436				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	99	98	69 - 129	0	20		
Chlorobenzene	110	108	61 - 121	2	20		
1,1-Dichloroethene	93	94	65 - 125	1	20		
Toluene	105	102	70 - 130	3	20		
Trichloroethene	98	95	74 - 134	2	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	104	105	79 - 118
1,2-Dichloroethane-d4	109	113	78 - 117
Toluene-d8	112	109	77 - 121

Calculations are performed before rounding to avoid round-off errors in calculated results.

720- 4217

100518

Erler & Kalinowski, Inc.

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

CONSULTING ENGINEERS AND SCIENTISTS 1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: Presidio

Project No.: A000003.08

Location: Building 937

Sampled By: Z. Maliga

Reporting: (circle all that apply)

Hard Copy Format: PDF

Electronic Format: EDF (CA State)

Provide Chromatograms: NO

EPA Data Report Level: III/IV (See Remarks)

Report results to (email or fax no.):

(1) mkking@ekiconsult.com (Michelle King)

(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

Laboratory: (Address/Phone No./Contact Person)

Attn: Dimple Sharma
STL San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919
Fax: 925-484-1096

EKI COC No.: 4

Revision: ____ (A, B, C, D, etc.)

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	VOCs (EPA 8260B)	Title 22 Metals (EPA 6020)	TPH-D (EPA 8015M)	TPH-G (EPA 8015M)	EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937 SB 112		6/21/06	11:00	WATER	3 VOAS	X						STD	Level III
937 SB 112 DUP			11:10			X							
937 SB 130			11:30			X							
937 SB 129			11:15			X							
937 SB 129 DUP			11:15			X							
TB 2			9:45			X							
937 SB 110			14:30			X							
933 SB 103			15:30		"	X							
933 SB 116			13:50		"	X							
933 SB 117			14:20			X							Level IV

Special Instructions/Notes: Temp: 2°C

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Zita Maliga	6/21/06	17:00	STL-SF 1700
Relinquished by: (Signature/Affiliation) 6/21/06	Date	Time 19:10	Received by: (Signature/Affiliation) D. Dadoo STL-SF 6/21/06
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)

LOGIN SAMPLE RECEIPT CHECK LIST

Client: Erler & Kalinowski, Inc.   Job Number: 720-4217-1

Login Number: 4217

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

ANALYTICAL REPORT

Job Number: 720-4380-1

Job Description: Presidio 937 Marine drive/Bldg. 937

For:
Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010

Attention: Mr. Adam Abeles

Afsaneh Salimpour
Project Manager I
asalimpour@stl-inc.com
07/21/2006

cc: Mr. John Dewitt
Mr. Nina Pozdnyakova

Project Manager: Afsaneh Salimpour

EXECUTIVE SUMMARY - Detections

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-4380-1	**937SK01**				
Diesel Range Organics [C12-C24]		6.7	1.1	mg/Kg	8015B
Arsenic		4.4	0.20	mg/Kg	6020
Antimony		1.2	0.20	mg/Kg	6020
Barium		130	0.20	mg/Kg	6020
Chromium		200	0.20	mg/Kg	6020
Cobalt		19	0.20	mg/Kg	6020
Copper		37	0.20	mg/Kg	6020
Lead		68	0.20	mg/Kg	6020
Molybdenum		0.58	0.20	mg/Kg	6020
Nickel		230	0.20	mg/Kg	6020
Vanadium		39	0.20	mg/Kg	6020
Zinc		95	0.51	mg/Kg	6020
Mercury		0.14	0.056	mg/Kg	7471A

METHOD SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Volatile Organic Compounds by GC/MS	STL-SF	SW846 8260B	
Purge and Trap for Solids	STL-SF		SW846 5030B
Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)	STL-SF	SW846 8015B	
Purge and Trap for Solids	STL-SF		SW846 5030B
Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)	STL-SF	SW846 8015B	
Ultrasonic Extraction	STL-SF		SW846 3550B
Inductively Coupled Plasma - Mass Spectrometry	STL-SEA	SW846 6020	
Acid Digestion of Sediments, Sludges, and Soils	STL-SEA		SW846 3050B
Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)	STL-SF	SW846 7471A	
Mercury in Solid or Semi-Solid Waste (Manual	STL-SF		SW846 7471A
Percent Moisture	STL-SF	EPA PercentMoisture	

LAB REFERENCES:

STL-SEA = STL-Seattle
STL-SF = STL-San Francisco

METHOD REFERENCES:

EPA - US Environmental Protection Agency

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Method	Analyst	Analyst ID
SW846 8260B	Lew, Matthew	MLEW
SW846 8015B	Relja, Marlene	MR
SW846 8015B	Le, Lien	LL
SW846 6020	Woo, Fred C	FCW
SW846 7471A	Arndt, Christopher	CA

SAMPLE SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-4380-1	937SK01	Solid	06/28/2006 1230	06/30/2006 1715

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Client Sample ID: 937SK01

Lab Sample ID:	720-4380-1			Date Sampled:	06/28/2006 1230
Client Matrix:	Solid	% Moisture:	12.2	Date Received:	06/30/2006 1715

8260B Volatile Organic Compounds by GC/MS

Method:	8260B	Analysis Batch: 720-10896		Instrument ID:	Varian 3900E
Preparation:	5030B			Lab File ID:	c:\varianws\data\200607\07
Dilution:	1.0			Initial Weight/Volume:	5.24 g
Date Analyzed:	07/12/2006 1050			Final Weight/Volume:	10 mL
Date Prepared:	07/12/2006 1050				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Benzene		ND		0.0054
Ethylbenzene		ND		0.0054
Toluene		ND		0.0054
Xylenes, Total		ND		0.011

Surrogate	%Rec	Acceptance Limits
Toluene-d8	94	70 - 130
1,2-Dichloroethane-d4	112	60 - 140

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Client Sample ID: 937SK01

Lab Sample ID:	720-4380-1			Date Sampled:	06/28/2006 1230
Client Matrix:	Solid	% Moisture:	12.2	Date Received:	06/30/2006 1715

8015B Nonhalogenated Organics using GC/FID -Modified (Gasoline Range Organics)

Method:	8015B	Analysis Batch: 720-11179	Instrument ID:	GC 5
Preparation:	5030B		Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	5.0 g
Date Analyzed:	07/12/2006 1350		Final Weight/Volume:	10 mL
Date Prepared:	07/12/2006 1350		Injection Volume:	
			Column ID:	PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Gasoline Range Organics (GRO)-C7-C12		ND		0.46

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	104	58 - 124

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Client Sample ID: 937SK01

Lab Sample ID:	720-4380-1			Date Sampled:	06/28/2006 1230
Client Matrix:	Solid	% Moisture:	12.2	Date Received:	06/30/2006 1715

8015B Nonhalogenated Organics using GC/FID -Modified (Diesel Range Organics)

Method:	8015B	Analysis Batch: 720-10704	Instrument ID: HP DRO5
Preparation:	3550B	Prep Batch: 720-10619	Lab File ID: N/A
Dilution:	1.0		Initial Weight/Volume: 30.31 g
Date Analyzed:	07/05/2006 2106		Final Weight/Volume: 5 mL
Date Prepared:	07/05/2006 0707		Injection Volume:
			Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Diesel Range Organics [C12-C24]		6.7		1.1

Surrogate	%Rec	Acceptance Limits
o-Terphenyl	80	60 - 130

Analytical Data

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Client Sample ID: 937SK01

Lab Sample ID:	720-4380-1			Date Sampled:	06/28/2006 1230
Client Matrix:	Solid	% Moisture:	12.2	Date Received:	06/30/2006 1715

6020 Inductively Coupled Plasma - Mass Spectrometry

Method:	6020	Analysis Batch: 580-8707	Instrument ID:	SEA026
Preparation:	3050B	Prep Batch: 580-8670	Lab File ID:	N/A
Dilution:	5.0		Initial Weight/Volume:	0.5634 g
Date Analyzed:	07/07/2006 1218		Final Weight/Volume:	50 mL
Date Prepared:	07/07/2006 1008			

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Arsenic		4.4		0.20
Antimony		1.2		0.20
Barium		130		0.20
Beryllium		ND		0.20
Cadmium		ND		0.20
Chromium		200		0.20
Cobalt		19		0.20
Copper		37		0.20
Lead		68		0.20
Molybdenum		0.58		0.20
Nickel		230		0.20
Selenium		ND		0.51
Silver		ND		0.20
Thallium		ND		0.20
Vanadium		39		0.20
Zinc		95		0.51

7471A Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique)

Method:	7471A	Analysis Batch: 720-10637	Instrument ID:	FIMS 100
Preparation:	7471A	Prep Batch: 720-10615	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	1.01 g
Date Analyzed:	07/05/2006 1020		Final Weight/Volume:	50 mL
Date Prepared:	07/03/2006 2019			

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	RL
Mercury		0.14		0.056

DATA REPORTING QUALIFIERS

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Lab Section	Qualifier	Description
Metals		
	F	MS or MSD exceeds the control limits
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
GC/MS VOA				
Analysis Batch:720-10896				
LCS 720-10896/8	Lab Control Spike	Solid	8260B	
LCSD 720-10896/7	Lab Control Spike Duplicate	Solid	8260B	
MB 720-10896/9	Method Blank	Solid	8260B	
720-4380-1	937SK01	Solid	8260B	
720-4380-1MS	Matrix Spike	Solid	8260B	
720-4380-1MSD	Matrix Spike Duplicate	Solid	8260B	
GC VOA				
Analysis Batch:720-11179				
LCS 720-11179/2	Lab Control Spike	Solid	8015B	
LCSD 720-11179/3	Lab Control Spike Duplicate	Solid	8015B	
MB 720-11179/1	Method Blank	Solid	8015B	
720-4380-1	937SK01	Solid	8015B	
720-4380-1MS	Matrix Spike	Solid	8015B	
720-4380-1MSD	Matrix Spike Duplicate	Solid	8015B	
GC Semi VOA				
Prep Batch: 720-10619				
LCS 720-10619/2-A	Lab Control Spike	Solid	3550B	
LCSD 720-10619/3-A	Lab Control Spike Duplicate	Solid	3550B	
MB 720-10619/1-A	Method Blank	Solid	3550B	
720-4380-1	937SK01	Solid	3550B	
Analysis Batch:720-10704				
LCS 720-10619/2-A	Lab Control Spike	Solid	8015B	720-10619
LCSD 720-10619/3-A	Lab Control Spike Duplicate	Solid	8015B	720-10619
MB 720-10619/1-A	Method Blank	Solid	8015B	720-10619
720-4380-1	937SK01	Solid	8015B	720-10619

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
Metals				
Prep Batch: 580-8670				
LCS 580-8670/9-A	Lab Control Spike	Solid	3050B	
LCSD 580-8670/10-A	Lab Control Spike Duplicate	Solid	3050B	
MB 580-8670/8-A	Method Blank	Solid	3050B	
720-4380-1	937SK01	Solid	3050B	
720-4380-1DU	Duplicate	Solid	3050B	
720-4380-1MS	Matrix Spike	Solid	3050B	
720-4380-1MSD	Matrix Spike Duplicate	Solid	3050B	
Prep Batch: 720-10615				
LCS 720-10615/2-A	Lab Control Spike	Solid	7471A	
LCSD 720-10615/3-A	Lab Control Spike Duplicate	Solid	7471A	
MB 720-10615/1-A	Method Blank	Solid	7471A	
720-4380-1	937SK01	Solid	7471A	
720-4380-1MS	Matrix Spike	Solid	7471A	
720-4380-1MSD	Matrix Spike Duplicate	Solid	7471A	
Analysis Batch:580-8707				
LCS 580-8670/9-A	Lab Control Spike	Solid	6020	580-8670
LCSD 580-8670/10-A	Lab Control Spike Duplicate	Solid	6020	580-8670
MB 580-8670/8-A	Method Blank	Solid	6020	580-8670
720-4380-1	937SK01	Solid	6020	580-8670
720-4380-1DU	Duplicate	Solid	6020	580-8670
720-4380-1MS	Matrix Spike	Solid	6020	580-8670
720-4380-1MSD	Matrix Spike Duplicate	Solid	6020	580-8670
Analysis Batch:720-10637				
LCS 720-10615/2-A	Lab Control Spike	Solid	7471A	720-10615
LCSD 720-10615/3-A	Lab Control Spike Duplicate	Solid	7471A	720-10615
MB 720-10615/1-A	Method Blank	Solid	7471A	720-10615
720-4380-1	937SK01	Solid	7471A	720-10615
720-4380-1MS	Matrix Spike	Solid	7471A	720-10615
720-4380-1MSD	Matrix Spike Duplicate	Solid	7471A	720-10615

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Method Blank - Batch: 720-10896

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 720-10896/9
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/12/2006 1011
Date Prepared: 07/12/2006 1011

Analysis Batch: 720-10896
Prep Batch: N/A
Units: mg/Kg

Instrument ID: Varian 3900E
Lab File ID: c:\varianws\data\200607\07
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
Benzene	ND		0.0050
Ethylbenzene	ND		0.0050
Toluene	ND		0.0050
Xylenes, Total	ND		0.010

Surrogate	% Rec	Acceptance Limits
Toluene-d8	92	70 - 130
1,2-Dichloroethane-d4	121	60 - 140

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-10896

Method: 8260B
Preparation: 5030B

LCS Lab Sample ID: LCS 720-10896/8
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/12/2006 0928
Date Prepared: 07/12/2006 0928

Analysis Batch: 720-10896
Prep Batch: N/A
Units: mg/Kg

Instrument ID: Varian 3900E
Lab File ID: c:\varianws\data\200607\07
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

LCSD Lab Sample ID: LCSD 720-10896/7
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/12/2006 0950
Date Prepared: 07/12/2006 0950

Analysis Batch: 720-10896
Prep Batch: N/A
Units: mg/Kg

Instrument ID: Varian 3900E
Lab File ID: c:\varianws\data\200607\071
Initial Weight/Volume: 5 g
Final Weight/Volume: 10 mL

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	107	102	69 - 129	5	20		
Toluene	97	97	70 - 130	0	20		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
Toluene-d8	97	99	70 - 130
1,2-Dichloroethane-d4	111	113	60 - 140

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-10896

Method: 8260B
Preparation: 5030B

MS Lab Sample ID: 720-4380-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/12/2006 1154
Date Prepared: 07/12/2006 1154

Analysis Batch: 720-10896
Prep Batch: N/A

Instrument ID: Varian 3900E
Lab File ID: c:\varianws\data\200607\(
Initial Weight/Volume: 5.06 g
Final Weight/Volume: 10 mL

MSD Lab Sample ID: 720-4380-1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/12/2006 1216
Date Prepared: 07/12/2006 1216

Analysis Batch: 720-10896
Prep Batch: N/A

Instrument ID: Varian 3900E
Lab File ID: c:\varianws\data\200607\07
Initial Weight/Volume: 5.14 g
Final Weight/Volume: 10 mL

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	104	104	69 - 129	2	20		
Toluene	100	102	70 - 130	0	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Toluene-d8	97	96	70 - 130
1,2-Dichloroethane-d4	114	115	60 - 140

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Method Blank - Batch: 720-11179

Method: 8015B
Preparation: 5030B

Lab Sample ID: MB 720-11179/1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/12/2006 1036
Date Prepared: 07/12/2006 1036

Analysis Batch: 720-11179
Prep Batch: N/A
Units: mg/Kg

Instrument ID: GC 5
Lab File ID: N/A
Initial Weight/Volume: 5.0 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result	Qual	RL
Gasoline Range Organics (GRO)-C7-C12	ND		0.40

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	79	58 - 124

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-11179

Method: 8015B
Preparation: 5030B

LCS Lab Sample ID: LCS 720-11179/2
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/12/2006 1102
Date Prepared: 07/12/2006 1102

Analysis Batch: 720-11179
Prep Batch: N/A
Units: mg/Kg

Instrument ID: GC 5
Lab File ID: N/A
Initial Weight/Volume: 5.0 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

LCSD Lab Sample ID: LCSD 720-11179/3
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/12/2006 1129
Date Prepared: 07/12/2006 1129

Analysis Batch: 720-11179
Prep Batch: N/A
Units: mg/Kg

Instrument ID: GC 5
Lab File ID: N/A
Initial Weight/Volume: 5.0 g
Final Weight/Volume: 10 mL
Injection Volume:
Column ID: PRIMARY

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Gasoline Range Organics (GRO)-C7-C12	116	119	75 - 125	3	35		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
4-Bromofluorobenzene	93	100	58 - 124

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-11179

Method: 8015B
Preparation: 5030B

MS Lab Sample ID:	720-4380-1	Analysis Batch:	720-11179	Instrument ID:	GC 5
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	5.0 g
Date Analyzed:	07/12/2006 1444			Final Weight/Volume:	10 mL
Date Prepared:	07/12/2006 1444			Injection Volume:	
				Column ID:	PRIMARY

MSD Lab Sample ID:	720-4380-1	Analysis Batch:	720-11179	Instrument ID:	GC 5
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	5.0 g
Date Analyzed:	07/12/2006 1510			Final Weight/Volume:	10 mL
Date Prepared:	07/12/2006 1510			Injection Volume:	
				Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Gasoline Range Organics (GRO)-C7-C12	89	92	65 - 135	4	35		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
4-Bromofluorobenzene	96	81	58 - 124

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Method Blank - Batch: 720-10619

Method: 8015B
Preparation: 3550B

Lab Sample ID:	MB 720-10619/1-A	Analysis Batch:	720-10704	Instrument ID:	HP DRO5
Client Matrix:	Solid	Prep Batch:	720-10619	Lab File ID:	N/A
Dilution:	1.0	Units:	mg/Kg	Initial Weight/Volume:	30.08 g
Date Analyzed:	07/05/2006 1744			Final Weight/Volume:	5 mL
Date Prepared:	07/05/2006 0707			Injection Volume:	
				Column ID:	PRIMARY

Analyte	Result	Qual	RL
Diesel Range Organics [C12-C24]	ND		1.0

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	78	60 - 130

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-10619

Method: 8015B
Preparation: 3550B

LCS Lab Sample ID:	LCS 720-10619/2-A	Analysis Batch:	720-10704	Instrument ID:	HP DRO5
Client Matrix:	Solid	Prep Batch:	720-10619	Lab File ID:	N/A
Dilution:	1.0	Units:	mg/Kg	Initial Weight/Volume:	30.14 g
Date Analyzed:	07/05/2006 1811			Final Weight/Volume:	5 mL
Date Prepared:	07/05/2006 0707			Injection Volume:	
				Column ID:	PRIMARY

LCSD Lab Sample ID:	LCSD 720-10619/3-A	Analysis Batch:	720-10704	Instrument ID:	HP DRO5
Client Matrix:	Solid	Prep Batch:	720-10619	Lab File ID:	N/A
Dilution:	1.0	Units:	mg/Kg	Initial Weight/Volume:	30.15 g
Date Analyzed:	07/05/2006 1838			Final Weight/Volume:	5 mL
Date Prepared:	07/05/2006 0707			Injection Volume:	
				Column ID:	PRIMARY

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Diesel Range Organics [C12-C24]	94	96	60 - 130	2	30		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	72	74	60 - 130

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc.   Job Number: 720-4380-1

Method Blank - Batch: 580-8670

Method: 6020
Preparation: 3050B

Lab Sample ID: MB 580-8670/8-A	Analysis Batch: 580-8707	Instrument ID: SEA026
Client Matrix: Solid	Prep Batch: 580-8670	Lab File ID: N/A
Dilution: 1.0	Units: mg/Kg	Initial Weight/Volume: 0.5 g
Date Analyzed: 07/07/2006 1207		Final Weight/Volume: 50 mL
Date Prepared: 07/07/2006 1008		

Analyte	Result	Qual	RL
Arsenic	ND		0.040
Antimony	ND		0.040
Barium	ND		0.040
Beryllium	ND		0.040
Cadmium	ND		0.040
Chromium	ND		0.040
Cobalt	ND		0.040
Copper	ND		0.040
Lead	ND		0.040
Molybdenum	ND		0.040
Nickel	ND		0.040
Selenium	ND		0.10
Silver	ND		0.040
Thallium	ND		0.040
Vanadium	ND		0.040
Zinc	ND		0.10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 580-8670

Method: 6020
Preparation: 3050B

LCS Lab Sample ID:	LCS 580-8670/9-A	Analysis Batch:	580-8707	Instrument ID:	SEA026
Client Matrix:	Solid	Prep Batch:	580-8670	Lab File ID:	N/A
Dilution:	50	Units:	mg/Kg	Initial Weight/Volume:	0.5 g
Date Analyzed:	07/07/2006 1248			Final Weight/Volume:	50 mL
Date Prepared:	07/07/2006 1008				

LCSD Lab Sample ID:	LCSD 580-8670/10-A	Analysis Batch:	580-8707	Instrument ID:	SEA026
Client Matrix:	Solid	Prep Batch:	580-8670	Lab File ID:	N/A
Dilution:	50	Units:	mg/Kg	Initial Weight/Volume:	0.5 g
Date Analyzed:	07/07/2006 1253			Final Weight/Volume:	50 mL
Date Prepared:	07/07/2006 1008				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Arsenic	97	98	80 - 120	1	35		
Antimony	83	83	80 - 120	1	35		
Barium	99	98	80 - 120	1	35		
Beryllium	103	94	80 - 120	10	35		
Cadmium	91	93	80 - 120	1	35		
Chromium	110	106	80 - 120	4	35		
Cobalt	107	106	80 - 120	1	35		
Copper	104	102	80 - 120	2	35		
Lead	105	104	80 - 120	0	35		
Molybdenum	99	98	80 - 120	1	35		
Nickel	107	105	80 - 120	1	35		
Selenium	92	101	80 - 120	9	35		
Silver	96	96	80 - 120	0	35		
Thallium	106	106	80 - 120	1	35		
Vanadium	109	106	80 - 120	3	35		
Zinc	97	102	80 - 120	6	35		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc.

Job Number: 720-4380-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 580-8670

Method: 6020
Preparation: 3050B

MS Lab Sample ID:	720-4380-1	Analysis Batch:	580-8707	Instrument ID:	SEA026
Client Matrix:	Solid	Prep Batch:	580-8670	Lab File ID:	N/A
Dilution:	50			Initial Weight/Volume:	0.5982 g
Date Analyzed:	07/07/2006 1233			Final Weight/Volume:	50 mL
Date Prepared:	07/07/2006 1008				

MSD Lab Sample ID:	720-4380-1	Analysis Batch:	580-8707	Instrument ID:	SEA026
Client Matrix:	Solid	Prep Batch:	580-8670	Lab File ID:	N/A
Dilution:	50			Initial Weight/Volume:	0.5507 g
Date Analyzed:	07/07/2006 1238			Final Weight/Volume:	50 mL
Date Prepared:	07/07/2006 1008				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Arsenic	100	103	75 - 125	11	35		
Antimony	90	95	75 - 125	13	35		
Barium	95	103	75 - 125	12	35		
Beryllium	99	101	75 - 125	9	35		
Cadmium	99	96	75 - 125	5	35		
Chromium	15	79	75 - 125	13	35	4	4
Cobalt	103	109	75 - 125	12	35		
Copper	91	101	75 - 125	11	35		
Lead	97	108	75 - 125	12	35		
Molybdenum	96	99	75 - 125	11	35		
Nickel	69	100	75 - 125	12	35	F	
Selenium	103	104	75 - 125	9	35		
Silver	99	100	75 - 125	9	35		
Thallium	109	109	75 - 125	8	35		
Vanadium	102	108	75 - 125	10	35		
Zinc	93	111	75 - 125	13	35		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Matrix Duplicate - Batch: 580-8670

Method: 6020
Preparation: 3050B

Lab Sample ID: 720-4380-1
Client Matrix: Solid
Dilution: 5.0
Date Analyzed: 07/07/2006 1228
Date Prepared: 07/07/2006 1008

Analysis Batch: 580-8707
Prep Batch: 580-8670
Units: mg/Kg

Instrument ID: SEA026
Lab File ID: N/A
Initial Weight/Volume: 0.5668 g
Final Weight/Volume: 50 mL

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Arsenic	4.40	4.15	6	35	
Antimony	1.16	1.16	0	35	
Barium	128	128	0	35	
Beryllium	0.189	0.203	7	35	
Cadmium	0.136	0.133	2	35	
Chromium	197	197	0	35	
Cobalt	19.1	18.8	2	35	
Copper	36.6	35.8	2	35	
Lead	67.6	66.5	2	35	
Molybdenum	0.580	0.555	4	35	
Nickel	229	228	1	35	
Selenium	0.195	0.204	5	35	
Silver	0.115	0.0769	40	35	
Thallium	0.0394	0.0347	13	35	
Vanadium	39.1	40.6	4	35	
Zinc	95.3	94.6	1	35	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4380-1

Method Blank - Batch: 720-10615

Method: 7471A
Preparation: 7471A

Lab Sample ID: MB 720-10615/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/05/2006 1016
Date Prepared: 07/03/2006 2019

Analysis Batch: 720-10637
Prep Batch: 720-10615
Units: mg/Kg

Instrument ID: FIMS 100
Lab File ID: N/A
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 50 mL

Analyte	Result	Qual	RL
Mercury	ND		0.050

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-10615

Method: 7471A
Preparation: 7471A

LCS Lab Sample ID: LCS 720-10615/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/05/2006 1018
Date Prepared: 07/03/2006 2019

Analysis Batch: 720-10637
Prep Batch: 720-10615
Units: mg/Kg

Instrument ID: FIMS 100
Lab File ID: N/A
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 50 mL

LCSD Lab Sample ID: LCSD 720-10615/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 07/05/2006 1019
Date Prepared: 07/03/2006 2019

Analysis Batch: 720-10637
Prep Batch: 720-10615
Units: mg/Kg

Instrument ID: FIMS 100
Lab File ID: N/A
Initial Weight/Volume: 1.00 g
Final Weight/Volume: 50 mL

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Mercury	103	106	85 - 115	3	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc.　　Job Number: 720-4380-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-10615

Method: 7471A
Preparation: 7471A

MS Lab Sample ID:	720-4380-1	Analysis Batch:	720-10637	Instrument ID:	FIMS 100
Client Matrix:	Solid	Prep Batch:	720-10615	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	1.02 g
Date Analyzed:	07/05/2006 1021			Final Weight/Volume:	50 mL
Date Prepared:	07/03/2006 2019				

MSD Lab Sample ID:	720-4380-1	Analysis Batch:	720-10637	Instrument ID:	FIMS 100
Client Matrix:	Solid	Prep Batch:	720-10615	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	1.00 g
Date Analyzed:	07/05/2006 1025			Final Weight/Volume:	50 mL
Date Prepared:	07/03/2006 2019				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Mercury	106	108	85 - 115	3	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

720-4380 100651

Erler & Kalinowski, Inc.

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

CONSULTING ENGINEERS AND SCIENTISTS 1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: Presidio
Project No.: A000003.08
Location: Building 937
Sampled By: Z. Maliga
Reporting: (circle all that apply)
Laboratory: (Address/Phone No./Contact Person)
Attn: Dimple Sharma
STL San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919
Fax: 925-484-1096

Hard Copy Format: PDF
Electronic Format: EDD (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III/IV (See Remarks)
Report results to (email or fax no.):
(1) mkking@ekiconsult.com (Michelle King)
(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

EKI COC No.: 8
Revision: ____ (A, B, C, D, etc.)

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	BTEX (EPA 8260B)	Title 22 Metals (EPA 6020)	TPH-D (EPA 8015M)	TPH-G (EPA 8015M)					EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937 SK01		28-Jun-06	12:30	SOIL	1 liner	x	x	x	x							STD	Level III

Special Instructions/Notes: temp: 4°C

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Z. Maliga	6/28/06	12:30	EKI Sample Refrigerator
EKI Sample Fridge	6/29/06	9:00 am	J T Delwith EKI
J T Delwith EKI	6/29/06	3:18	STL-SF

6/29/06

Rec'd by: D Daiobo STL-SF 6/29/06 17:15

LOGIN SAMPLE RECEIPT CHECK LIST

Client: Erler & Kalinowski, Inc.　　Job Number: 720-4380-1

Login Number: 4380

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

ANALYTICAL REPORT

Job Number: 720-4747-1

Job Description: Presidio 937 Marine drive/Bldg. 937

For:
Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010

Attention: Mr. Adam Abeles

Afsaneh Salimpour
Project Manager I
asalimpour@stl-inc.com
09/15/2006
Revision: 1

cc: Mr. John Dewitt
Mr. Nina Pozdnyakova

Project Manager: Afsaneh Salimpour

Severn Trent Laboratories, Inc.
STL San Francisco 1220 Quarry Lane, Pleasanton, CA 94566
Tel (925) 484-1919 Fax (925) 484-1096 www.stl-inc.com

EXECUTIVE SUMMARY - Detections

Client: Erler & Kalinowski, Inc. Job Number: 720-4747-1

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-4747-1	**937SK01**				
STLC Citrate					
Chromium		1.3	0.50	mg/L	6010B
Nickel		8.9	0.50	mg/L	6010B
Lead		0.70	0.50	mg/L	6010B

METHOD SUMMARY

Client: Erler & Kalinowski, Inc.   Job Number: 720-4747-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Inductively Coupled Plasma - Atomic Emission Spectrometry	STL SF	SW846 6010B	
Toxicity Characteristic Leaching Procedure	STL SF		SW846 1311
Acid Digestion of Waters for Total Recoverable or	STL SF		SW846 3005A
Acid Digestion of Aqueous Samples and Extracts	STL SF		SW846 3010A
California WET Citrate Leach	STL SF		CA-WET CA WET Citrate

LAB REFERENCES:

STL SF = STL San Francisco

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986
And Its Updates.

METHOD / ANALYST SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4747-1

Method	Analyst	Analyst ID
SW846 6010B	Barekzai, Shafi	SB

SAMPLE SUMMARY

Client: Erler & Kalinowski, Inc. Job Number: 720-4747-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-4747-1	937SK01	Solid	06/28/2006 1230	06/29/2006 0000

Analytical Data

Client: Erler & Kalinowski, Inc.　　Job Number: 720-4747-1

Client Sample ID: 937SK01

Lab Sample ID:	720-4747-1	Date Sampled:	06/28/2006 1230
Client Matrix:	Solid	Date Received:	06/29/2006 0000

6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-TCLP

Method:	6010B	Analysis Batch: 720-11502	Instrument ID:	Varian ICP
Preparation:	3010A	Prep Batch: 720-11447	Lab File ID:	N/A
Dilution:	1.0	Leachate Batch: 720-11441	Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 0753		Final Weight/Volume:	50 mL
Date Prepared:	07/28/2006 1422			
Date Leached:	07/27/2006 1400			

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	RL
Chromium		ND		0.50

6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-STLC Citrate

Method:	6010B	Analysis Batch: 720-11502	Instrument ID:	Varian ICP
Preparation:	3005A	Prep Batch: 720-11481	Lab File ID:	N/A
Dilution:	1.0	Leachate Batch: 720-11439	Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 1103		Final Weight/Volume:	50 mL
Date Prepared:	07/31/2006 0753			
Date Leached:	07/26/2006 1800			

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	RL
Chromium		1.3		0.50
Nickel		8.9		0.50
Lead		0.70		0.50

Client: Erler & Kalinowski, Inc. Job Number: 720-4747-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 720-11439					
MB 720-11439/1-B	Method Blank	C	Solid	CA WET Citrate	
720-4747-1	937SK01	C	Solid	CA WET Citrate	
Prep Batch: 720-11441					
MB 720-11441/1-B	Method Blank	P	Solid	1311	
720-4747-1	937SK01	P	Solid	1311	
Prep Batch: 720-11447					
LCS 720-11447/2-A	Lab Control Spike	P	Solid	3010A	
LCSD 720-11447/3-A	Lab Control Spike Duplicate	P	Solid	3010A	
MB 720-11441/1-B	Method Blank	P	Solid	3010A	720-11441
720-4747-1MS	Matrix Spike	P	Solid	3010A	
720-4747-1MSD	Matrix Spike Duplicate	P	Solid	3010A	
720-4747-1	937SK01	P	Solid	3010A	720-11441
Prep Batch: 720-11481					
LCS 720-11481/2-A	Lab Control Spike	C	Solid	3005A	
LCSD 720-11481/3-A	Lab Control Spike Duplicate	C	Solid	3005A	
MB 720-11439/1-B	Method Blank	C	Solid	3005A	720-11439
720-4719-A-2-L MS+C	Matrix Spike	C	Solid	3005A	
720-4719-A-2-M MSD+C	Matrix Spike Duplicate	C	Solid	3005A	
720-4747-1	937SK01	C	Solid	3005A	720-11439
Analysis Batch:720-11502					
LCS 720-11447/2-A	Lab Control Spike	P	Solid	6010B	720-11447
LCSD 720-11447/3-A	Lab Control Spike Duplicate	P	Solid	6010B	720-11447
MB 720-11441/1-B	Method Blank	P	Solid	6010B	720-11447
LCS 720-11481/2-A	Lab Control Spike	C	Solid	6010B	720-11481
LCSD 720-11481/3-A	Lab Control Spike Duplicate	C	Solid	6010B	720-11481
MB 720-11439/1-B	Method Blank	C	Solid	6010B	720-11481
720-4719-A-2-L MS+C	Matrix Spike	C	Solid	6010B	720-11481
720-4719-A-2-M MSD+C	Matrix Spike Duplicate	C	Solid	6010B	720-11481
720-4747-1	937SK01	P	Solid	6010B	720-11447
720-4747-1MS	Matrix Spike	P	Solid	6010B	720-11447
720-4747-1MSD	Matrix Spike Duplicate	P	Solid	6010B	720-11447
720-4747-1	937SK01	C	Solid	6010B	720-11481

Report Basis

C = STLC Citrate

P = TCLP

Quality Control Results

Client: Erler & Kalinowski, Inc. Job Number: 720-4747-1

Method Blank - Batch: 720-11447

Method: 6010B
Preparation: 3010A
TCLP

Lab Sample ID:	MB 720-11441/1-B	Analysis Batch: 720-11502	Instrument ID: Varian ICP
Client Matrix:	Solid	Prep Batch: 720-11447	Lab File ID: N/A
Dilution:	1.0	Units: mg/L	Initial Weight/Volume: 5 mL
Date Analyzed:	07/31/2006 0743		Final Weight/Volume: 50 mL
Date Prepared:	07/28/2006 1422		
Date Leached:	07/27/2006 1400	Leachate Batch: 720-11441	

Analyte	Result	Qual	RL
Chromium	ND		0.50

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-11447

Method: 6010B
Preparation: 3010A
TCLP

LCS Lab Sample ID:	LCS 720-11447/2-A	Analysis Batch: 720-11502	Instrument ID: Varian ICP
Client Matrix:	Solid	Prep Batch: 720-11447	Lab File ID: N/A
Dilution:	1.0	Units: mg/L	Initial Weight/Volume: 5 mL
Date Analyzed:	07/31/2006 0746		Final Weight/Volume: 50 mL
Date Prepared:	07/28/2006 1422		

LCSD Lab Sample ID:	LCSD 720-11447/3-A	Analysis Batch: 720-11502	Instrument ID: Varian ICP
Client Matrix:	Solid	Prep Batch: 720-11447	Lab File ID: N/A
Dilution:	1.0	Units: mg/L	Initial Weight/Volume: 5 mL
Date Analyzed:	07/31/2006 0750		Final Weight/Volume: 50 mL
Date Prepared:	07/28/2006 1422		

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Chromium	102	101	80 - 120	1	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4747-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-11447

Method: 6010B
Preparation: 3010A
TCLP

MS Lab Sample ID:	720-4747-1	Analysis Batch:	720-11502	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-11447	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 0757			Final Weight/Volume:	50 mL
Date Prepared:	07/28/2006 1422				

MSD Lab Sample ID:	720-4747-1	Analysis Batch:	720-11502	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-11447	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 0800			Final Weight/Volume:	50 mL
Date Prepared:	07/28/2006 1422				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Chromium	100	99	75 - 125	1	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc.   Job Number: 720-4747-1

Method Blank - Batch: 720-11481

Method: 6010B
Preparation: 3005A
STLC Citrate

Lab Sample ID:	MB 720-11439/1-B	Analysis Batch:	720-11502	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-11481	Lab File ID:	N/A
Dilution:	1.0	Units:	mg/L	Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 1028			Final Weight/Volume:	50 mL
Date Prepared:	07/31/2006 0753				
Date Leached:	07/26/2006 1800	Leachate Batch:	720-11439		

Analyte	Result	Qual	RL
Chromium	ND		0.50
Nickel	ND		0.50
Lead	ND		0.50

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 720-11481

Method: 6010B
Preparation: 3005A
STLC Citrate

LCS Lab Sample ID:	LCS 720-11481/2-A	Analysis Batch:	720-11502	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-11481	Lab File ID:	N/A
Dilution:	1.0	Units:	mg/L	Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 1032			Final Weight/Volume:	50 mL
Date Prepared:	07/31/2006 0753				

LCSD Lab Sample ID:	LCSD 720-11481/3-A	Analysis Batch:	720-11502	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-11481	Lab File ID:	N/A
Dilution:	1.0	Units:	mg/L	Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 1042			Final Weight/Volume:	50 mL
Date Prepared:	07/31/2006 0753				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Chromium	100	99	80 - 120	1	20		
Nickel	99	98	80 - 120	1	20		
Lead	96	95	80 - 120	0	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Erler & Kalinowski, Inc. Job Number: 720-4747-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-11481

Method: 6010B
Preparation: 3005A
STLC Citrate

MS Lab Sample ID:	720-4719-A-2-L MS+C	Analysis Batch:	720-11502	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-11481	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 1049			Final Weight/Volume:	50 mL
Date Prepared:	07/31/2006 0753				

MSD Lab Sample ID:	720-4719-A-2-M MSD+C	Analysis Batch:	720-11502	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-11481	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	5 mL
Date Analyzed:	07/31/2006 1052			Final Weight/Volume:	50 mL
Date Prepared:	07/31/2006 0753				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Chromium	98	100	80 - 120	2	20		
Nickel	94	97	80 - 120	2	20		
Lead	92	94	80 - 120	1	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

SEVERN TRENT STL

720-4747

101030

STL San Francisco ADD ON/CHANGE ORDER

New Submission No.:

Reference No.:

ORIGINAL SUBMISSION INFORMATION

Client Name: EK I

Project Mgr.: John Dewitt

Project Name: Building 937

Project No.:

PO#:

Date Received:

Submission No.:

Name of Caller: John. Dewitt

Call Date: 7/24/06

Add on Due Date: 5-day'S

Bill To:

Attn.:

Comments:

ANALYSIS REQUEST

Sample ID	Date	Time	Matrix	Prev. Spl. #	TPH EPA - ☐ 8015/8021 ☐ 8260B ☐ Gas w/ ☐ BTEX ☐ MTBE	Purgeable Aromatics BTEX EPA - ☐ 8021 ☐ 8260B	TEPH (EPA 8015M) ☐ Silica Gel ☐ Diesel ☐ Motor Oil ☐ Other ___	Fuel Tests EPA 8260B: ☐ Gas ☐ BTEX ☐ Five Oxyenates ☐ DCA, EDB ☐ Ethanol	Purgeable Halocarbons (HVOCs) EPA 8021 by 8260B	Volatile Organics GC/MS (VOCs) ☐ EPA 8260B ☐ 624	Semivolatiles GC/MS ☐ EPA 8270 ☐ 625	Oil & Grease ☐ Petroleum (EPA 1664) ☐ Total	☐ Pesticides ☐ EPA 8081 ☐ 608 ☐ PCBs ☐ EPA 8082 ☐ 608	PNAs by ☐ 8270 ☐ 8310	CAM 17 Metals (EPA 6010/7470/7471)	Metals: ☐ Lead ☐ LUFT ☐ RCRA ☐ Other: ___	Low Level Metals by EPA 200.8/6020 (ICP-MS): ___	☐ W.E.T (STLC) ☐ TCLP	☐ Hexavalent Chromium ☐ pH (24h hold time for H_2O)	☐ Spec Cond. ☐ Alkalinity ☐ TSS ☐ TDS	Anions: ☐ Cl ☐ SO_4 ☐ NO_3 ☐ F ☐ Br ☐ NO_2 ☐ PO_4	STLC-CR, Pb Ni	TCLP-CR		NUMBER OF CONTAINERS
937SK01	6/28		SoiL																			X	X		

Rev 10/03

LOGIN SAMPLE RECEIPT CHECK LIST

Client: Erler & Kalinowski, Inc. Job Number: 720-4747-1

Login Number: 4747

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

Erler & Kalinowski, Inc. Project # A000003.08
933 Marine Drive, San Francisco, California

TEG Project #60614D

EPA Method 8260B VOC Analyses of SOIL VAPOR in ug/L of Vapor

SAMPLE NUMBER:		Probe Blank	933SB103	937SB110	937SB110	937SB110	937SB111	937SB111 dup	937SB112	937SB113	937SB114	937SB115	937SB116	937SB117	937SB118	937SB119	937SB120	937SB121	937SB122	937SB123
SAMPLE DEPTH (feet):			3.5	5.0	5.0	5.0	4.0	4.0	3.5	4.0	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0
PURGE VOLUME:			7	1	3	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
COLLECTION DATE:		6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06	6/14/06
COLLECTION TIME:		07:50	13:25	08:35	09:05	09:35	10:15	13:05	09:50	11:40	12:00	11:15	12:20	14:10	13:45	10:35	12:40	10:55	15:35	16:06
DILUTION FACTOR (VOCs):		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	RL																			
Dichlorodifluoromethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vinyl Chloride	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloroethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Methylene Chloride	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chloroform	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.19	nd	nd	0.10	nd
Carbon Tetrachloride	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Benzene	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.23	nd	nd	nd	nd	nd	0.16	nd	nd
Toluene	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	0.10	nd	nd	0.17	0.20	0.23	1.4	1.3	1.1	0.36	0.53	0.49	0.13	nd	nd	0.60	nd	nd	0.16	nd
Ethylbenzene	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
m,p-Xylene	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
o-Xylene	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1 Diflouroethane (leak check)	10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM)		111%	115%	113%	115%	115%	116%	116%	116%	117%	113%	115%	114%	116%	113%	114%	116%	117%	109%	135%
Surrogate Recovery (Toluene-d8)		106%	104%	104%	106%	104%	101%	104%	103%	104%	105%	104%	104%	106%	105%	101%	104%	106%	105%	118%
Surrogate Recovery (1,4-BFB)		95%	90%	112%	96%	96%	92%	91%	91%	92%	95%	92%	96%	93%	94%	88%	96%	96%	89%	114%

'RL' Indicates reporting limit at a dilution factor of 1
'nd' Indicates not detected at listed reporting limits

PHYSICAL PROPERTIES DATA - CAL-EPA DTSC Vapor Intrusion PACKAGE

PROJECT NAME: Presidio
PROJECT NO: A000003.08

		METHODOLOGY:	API RP40		API RP40	API RP40		API RP40			API RP40	WALKLEY-BLACK	
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENT. (1)	MOISTURE CONTENT		VOLUMETRIC AIR CONTENT	DENSITY		POROSITY (2), cm^3/cm^3			TOTAL PORE FLUID SATURATIONS,	TOTAL ORGANIC CARBON	FRACTION ORGANIC CARBON
			(%, dry weight)	(cm^3/cm^3)	(cm^3/cm^3)	BULK (g/cm^3)	GRAIN (g/cm^3)	TOTAL	AIR FILLED	WATER FILLED	(% Pv (3))	(mg/kg)	(g/g)
937SB113[2]	N/A	V	12.6	0.212	0.144	1.68	2.75	0.388	0.176	0.213	54.6	4050	4.05E-03
937SB112[1]	N/A	V	11.6	0.176	0.225	1.51	2.77	0.454	0.279	0.176	38.8	1400	1.40E-03
933SB103[2]	N/A	V	20.4	0.311	0.042	1.53	2.65	0.422	0.110	0.312	73.8	2050	2.05E-03

(1) Sample Orientation: H = horizontal; V = vertical (2) Total Porosity = no pore fluids in place; all interconnected pore channels; Air Filled = pore channels not occupied by pore fluids, native sample (3) Water = 0.9981 g/cc; Hydrocarbon = 0.8632 g/cc Vb = Bulk Volume, cc; Pv = Pore Volume, cc; ND = Not Detected

36484)

Erler & Kalinowski, Inc. **CHAIN OF CUSTODY RECORD** PAGE 1 OF 1

CONSULTING ENGINEERS AND SCIENTISTS 1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

Project Name: Presidio

Project No.: A000003.08

Location: Building 937

Sampled By: Z. Maliga

Reporting (circle all that apply)

Hard Copy Format: PDF

Electronic Format: EDD (CA State)

Provide Chromatograms: NO

EPA Data Report Level: III

Report results to (email or fax no.):

(1) mkking@ekiconsult.com (Michelle King)

(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

Laboratory: (Address/Phone No./Contact Person)

PTS Laboratories, Inc.
8100 Secura Way
Santa Fe Springs, CA 90670 USA

EKI COC No.:

Revision: ______ (A, B, C, D, etc.)

ANALYSES REQUESTED (Method No. / Analyte Group)

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	CAL-EPA DTSC Vapor Intrusion Package								EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
✓ 937SB113[2]		20-Jun-06	14:20	SOIL	1 2" liner	X										STD	
✓ 937SB112[1]		21-Jun-06	10:15	SOIL	1 2" liner	X										STD	
✓ 937SB129[2.5]		21-Jun-06	10:35	SOIL	1 2" liner										X		
✓ 933SB103[2]		21-Jun-06	15:10	SOIL	1 2" liner	X										STD	

Special Instructions/Notes:

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Z. Maliga	6/26/06	13:20	[illegible]
Relinquished by: (Signature/Affiliation)	Date	Time	**Received by:** (Signature/Affiliation) PTS 6/27/06 @ 12:22
Relinquished by: (Signature/Affiliation)	Date	Time	**Received by:** (Signature/Affiliation)

alpha
Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

25 August 2006

Erler & Kalinowski, Inc.
Attn: Michelle King
1870 Ogden Drive
Burlingame, CA 94010
RE: Presidio
Work Order: A606662

Enclosed are the results of analyses for samples received by the laboratory on 06/23/06 10:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Cheryl Watson For Sheri L. Speaks
Project Manager

This represents an amended copy of the original report

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

CHEMICAL EXAMINATION REPORT

Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010
Attn: Michelle King

Report Date: 08/25/06 12:12
Project No: A000003.08
Project ID: Presidio

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A606662	06/23/2006 10:00	EKI	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
937SB113[1.5]	A606662-01	Soil	06/20/06 15:05	06/23/06 10:00
937SB112[1.5]	A606662-02	Soil	06/21/06 10:20	06/23/06 10:00
933SB103[1.5]	A606662-03	Soil	06/21/06 15:15	06/23/06 10:00

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Bruce L. Gove

Bruce Gove
Laboratory Director

8/25/2006

Alpha Analytical Laboratories Inc.
208 Mason St. Ukiah, California 95482
e-mail: clientservices@alpha-labs.com • Phone: (707) 468-0401 • Fax: (707) 468-5267

CHEMICAL EXAMINATION REPORT

Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010
Attn: Michelle King

Report Date: 08/25/06 12:12
Project No: A000003.08
Project ID: Presidio

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A606662	06/23/2006 10:00	EKI	

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
937SB113[1.5] (A606662-01)			**Sample Type: Soil**			**Sampled: 06/20/06 15:05**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Organic Carbon	EPA 9060	AF62924	06/29/06	07/09/06	1	**8480 mg/kg**	1.00	
937SB112[1.5] (A606662-02)			**Sample Type: Soil**			**Sampled: 06/21/06 10:20**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Organic Carbon	EPA 9060	AF62924	06/29/06	07/09/06	1	**3710 mg/kg**	1.00	
933SB103[1.5] (A606662-03)			**Sample Type: Soil**			**Sampled: 06/21/06 15:15**		
Conventional Chemistry Parameters by APHA/EPA Methods								
Total Organic Carbon	EPA 9060	AF62924	06/29/06	07/09/06	1	**5780 mg/kg**	1.00	

Bruce L. Gove

Bruce Gove
Laboratory Director

8/25/2006

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Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A606662	06/23/2006 10:00	EKI	

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AF62924 - General Prep										
Blank (AF62924-BLK1)				Prepared: 06/29/06 Analyzed: 07/09/06						
Total Organic Carbon	ND	1.00	mg/kg							
LCS (AF62924-BS1)				Prepared: 06/29/06 Analyzed: 07/09/06						
Total Organic Carbon	7670	1.00	mg/kg	5370		143	56-144			
Duplicate (AF62924-DUP1)	**Source: A606662-01**			Prepared: 06/29/06 Analyzed: 07/09/06						
Total Organic Carbon	8120	1.00	mg/kg		8480			4.34	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Bruce Gove
Laboratory Director

8/25/2006

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CHEMICAL EXAMINATION REPORT

Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, CA 94010
Attn: Michelle King

Report Date: 08/25/06 12:12
Project No: A000003.08
Project ID: Presidio

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A606662	06/23/2006 10:00	EKI	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
PQL	Practical Quantitation Limit

* PROVIDE STANDARD QC REPORT PER JOHN DEWITT.
ALSO EXCEL EDD. JW 6-23-06 14:05

PAGE 1 OF 1

Erler & Kalinowski, Inc.

CONSULTING ENGINEERS AND SCIENTISTS

CHAIN OF CUSTODY RECORD

1870 Ogden Drive, Burlingame CA 94010 PHONE: 650-292-9100 FAX: 650-552-9012

EKI COC No.: 5
Revision: ______ (A, B, C, D, etc.)

Project Name: Presidio
Location: Building 937
Project No.: A000003.08
Sampled By: Z. Maliga
Laboratory: (Address/Phone No./Contact Person)
Alpha Analytical Laboratories, Inc.
208 Mason Street
Ukiah, CA 95482

Reporting: (circle all that apply)
Hard Copy Format: PDF
Electronic Format: EDF (CA State)
Provide Chromatograms: NO
EPA Data Report Level: III *

Report results to (email or fax no.):
(1) mkking@ekiconsult.com (Michelle King)
(2) npozdnyakova@ekiconsult.com (Nina Pozdnyakova)

ANALYSES REQUESTED

Field Sample Identification	Lab Sample No.	Date	Time	Matrix	No./Type of Containers and Preservative	Total Organic Carbon (EPA 9060)								EXTRACT AND HOLD	PLACE ON HOLD	EXPECTED TURNAROUND TIME	Remarks
937SB113[1.5]	A606662-1	20-Jun-06	15:05	SOIL	1 glass jar	X										STD	
937SB112[1.5]	2	21-Jun-06	10:20	SOIL	1 2" liner	X										STD	
933SB103[1.5]	3	21-Jun-06	15:15	SOIL	1 2" liner	X										STD	

Special Instructions/Notes:

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation or Carrier/Air Bill No.)
Z. Maliga	6/22/06	14:42	Via Fedex
	6/23/06	10:00	Shen Specks

APPENDIX C

RISK-BASED TARGET CONCENTRATIONS MODEL ANALYSIS

APPENDIX C

C.1 DEVELOPMENT OF RISK BASED TARGET CONCENTRATIONS

Risk-Based Target Concentrations (“RBTCs”) are site-specific numerical guidelines designed to help with identifying sources of chemicals of concern (“COCs”) that may pose significant human health risks, and to determine if mitigation measurements are necessary to reduce potential risks to future building occupants.

In the Trust’s Cleanup Level Document (EKI, 2002), Presidio-specific cleanup values were developed for soil, sediment, and groundwater. This document presents the development of RBTCs for Building 937 due to vapor intrusion. Since the vapor intrusion exposure pathway can be assessed using indoor air, sub-slab vapor, soil gas, and groundwater data, four sets of RBTCs are developed for populations visiting or working at Building 937.

The following sections explain the methodology followed to develop RBTCs for indoor air, sub-slab vapor, soil gas, and groundwater, including a list of identified chemicals of concern, a description of potentially exposed populations at Building 937, exposure pathways and assumptions, toxicity information for the identified COCs, and human health risk equations used to calculate RBTCs.

C.1.1 Identified Chemicals of Concern

All volatile chemicals detected at least once in indoor air, sub-slab vapor, or soil gas samples collected from Buildings 933 and 937 were retained as COCs in soil gas for Building 937. Twelve chemicals were identified as COCs in soil gas: benzene, chloroform, chloromethane, 1,1-dichloromethane, methylene chloride, tetrachloroethene (“PCE”), toluene, 1,1,1-trichloroethane, trichloroethene (“TCE”), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and xylenes. RBTCs for indoor air, sub-slab vapor, and soil gas were developed for this list of COCs.

Likewise, all volatile chemicals detected at least once in groundwater samples collected from Buildings 933 and 937 were retained as COCs in groundwater for Building 937. Five chemicals were identified as COCs in groundwater: bromodichloromethane, chlorobenzene, chloroform, PCE and TCE. RBTCs for indoor air and groundwater were developed for this list of COCs.

C.1.2 Potentially Exposed Populations

U.S. Environmental Protection Agency (“U.S. EPA”) defines “exposure” as the contact of a human with a chemical (U.S. EPA, 1989). In order to derive risk-based target concentrations, each group of people that could be potentially exposed to chemicals (*i.e.,* potentially exposed populations) must be defined.

Potentially exposed populations in connection with Building 937 consist of children, teenagers and adults visiting Building 937 and of commercial/industrial workers. The Trust has implemented a land use control prohibiting residential use at Building 937, thus no residential exposure scenarios are considered (EKI, 2006). The populations upon which RBTCs are based are described further below.

C.1.2.1 On-Site Recreational Users

Children and adults visiting Building 937 may be exposed to volatile organic compounds ("VOCs") that have migrated from the subsurface into indoor air. Potential tenants could include a café/restaurant, a sports equipment rental facility, or other public commercial use for Building 937. The exposure scenario assumes that an adult brings a child to the café or other commercial establishments for 3 hours 3 days per week (similar to 1-2 hours per day, 5 days per week). Consistent with the Presidio-wide Cleanup Level Document, recreational exposure is assumed to occur for 6 years as a child and 24 years as an adult.

In the event that Building 937 is converted into another recreational use area, such as a gymnasium, the potential exposure of a teenager participating in an indoor sport (e.g., basketball) inside Building 937 is evaluated. The teenager is assumed to have practices 3 hours per day, 5 days per week, 50 weeks per year. The active teenage breathing rate is assumed to be greater than the average recreational and commercial/industrial breathing rate for adults.

C.1.2.2 Commercial/Industrial Workers

Commercial/industrial exposure assumes 5 days per week for 25 years. The commercial/industrial exposure scenario also represents a conservative assessment of an adult recreational user of a gymnasium who may exercise 2 to 3 hours per day, 5 days per week for 25 years.

C.1.3 Potential Exposure Pathways

An "exposure pathway" describes the course a chemical takes from the source to the exposed individual, and generally includes four elements: (1) a source or mechanism of chemical release, (2) a retention or transport medium (*e.g.,* soil, groundwater, soil vapor), (3) a point of human contact, and (4) an exposure route (*e.g.,* ingestion, dermal absorption, inhalation (U.S. EPA, 1989). An exposure pathway is described as "complete" when all of these elements are met for an individual receptor.

Vapor intrusion into indoor air is the only potentially complete exposure pathway at Building 937.[1] In the Trust's Cleanup Level Document (EKI, 2002), recreational users of the Presidio were generally assumed to be primarily outdoors, therefore, vapor intrusion

[1] Due to residual chemical concentrations under the building foundation at the northeastern corner of Building 937, the land use control for the site requires that the site be capped and appropriate health and safety measures to be taken if the cap is breeched for maintenance or other construction activities.

of VOCs into indoor air was considered to be an incomplete pathway. This evaluation of vapor intrusion at Building 937 is a special condition of the recreational user.

C.1.3.1 Vapor Intrusion and Inhalation of VOCs

Vapor intrusion begins when VOCs partition into soil gas in the subsurface. The magnitude to which these compounds partition or volatilize into soil gas depends on the properties of the chemical. VOCs with higher vapor pressures, lower water solubilities, and lower affinities for sorption to soil, partition into soil gas to a greater extent than chemicals that do not have these properties.

Once in soil gas, some of the VOCs may migrate upwards or laterally by both diffusion and advection. Diffusion refers to the migration of chemicals from areas of high chemical concentration to areas of low chemical concentration. Diffusion is a relatively slow transport process as compared to advection, which occurs when soil gas containing volatile compounds is induced to migrate by pressure gradients. Soil gas containing VOCs may migrate into a building by diffusing through cracks in the foundation slab. Lower pressure inside a building may also sweep soil gas into the building through cracks or gaps by advection. The phenomenon of a lower pressure inside a building is sometimes referred to as a "stack effect." A stack effect can be caused by:

- Warmer air inside the building, which tends to rise and draw air from the lower parts of the building.
- Wind, which tends to impart a lower pressure inside the building.
- Manufacturing equipment exhausts, which tend to draw air into the building and lower the interior pressure.
- Mechanical ventilation systems, which induce a slight negative pressure inside the building.

In addition, tidal pumping (e.g., a rising tide) could cause a diurnal increase in vapor intrusion.

C.1.4 Toxicity Assessment

As defined by the U.S. EPA, the purpose of the toxicity assessment is to weigh available evidence regarding the potential for particular contaminants to cause adverse effects in exposed individuals and to provide, where possible, an estimate of the relationship between the extent of exposure to a contaminant and the increased likelihood and/or severity of adverse effects (U.S. EPA, 1989). The two broad categories of adverse human health effects recognized in the assessment of health risks are non-carcinogenic and carcinogenic effects.

California Environmental Protection Agency ("Cal-EPA"), particularly the Office of Environmental Health Hazard Assessment ("OEHHA"), and U.S. EPA are the primary sources of published toxicity estimates for various chemicals used in assessment of risks at contaminated sites. Toxicity criteria developed by both Cal-EPA and U.S. EPA are generally derived only for two exposure routes, ingestion (oral) and inhalation, by which the chemical enters the body.

This section provides quantitative estimates of the toxic effects associated with chemical of concern at Building 937, based on non-carcinogenic and carcinogenic effects, as described below. The sources from which toxicity data were obtained are discussed in Section C.1.4.3.

C.1.4.1 Non-Carcinogens Target Risk Level

As defined by U.S. EPA (U.S. EPA, 1989), non-carcinogenic effects are organ-specific and are manifested only after reaching a certain chemical dose. As a result, a range of exposures exists from zero to some finite value that can be tolerated with essentially no chance of adverse effects. The upper bound on this tolerance range or "safe dose" is identified as a reference dose ("R*f*D"), which represents the estimated maximum daily intake per unit body weight that can be tolerated without adverse health effects. Units of the RfD are dosage units, milligrams of chemical intake, per kilogram of body weight, per day *(i.e.,* mg/kg-day). A low RfD indicates a low threshold dose level and, therefore, a high chemical toxicity. Conversely, a chemical with a higher RfD has lower non-carcinogenic toxicity.

U.S. EPA (U.S. EPA, 1989) estimates the potential for non-carcinogenic effects by comparing a chronic exposure level (i.e., greater than 7 years) over a specified time period with a reference dose derived for a similar exposure period. This ratio of exposure to toxicity is called the hazard index ("HI"). Consistent with the NCP at 40 CFR 300.430(e)(2)(i)(A)(1), U.S. EPA (1991) established the standard default non-carcinogenic target risk level to correspond to a HI of unity (i.e., 1). This target risk level is equivalent to the degree of chemical exposure from all significant exposure pathways in a given medium below which it is unlikely for even sensitive populations to experience adverse health effects. A target HI of 1 was used to derive RBTCs at Building 937, based upon non-carcinogenic effects.

C.1.4.2 Carcinogen Target Risk Level

Carcinogenesis, unlike non-carcinogenic effects, is generally thought to be a phenomenon for which risk evaluation based on presumption of a threshold is inappropriate (U.S. EPA, 1989). For carcinogens, U.S. EPA assumes that a small number of molecular events can evoke changes in a single cell that can lead to uncontrolled cellular proliferation and eventually to a clinical state of disease. This hypothesized mechanism for carcinogenesis is referred to as "non-threshold" because there is not believed to be a level of exposure to such a chemical that does not pose a finite probability, however

small, of generating a carcinogenic response. No dose is thought to be risk-free. Therefore, in evaluating cancer risks, a safe dose cannot be estimated.

For carcinogenic effects, U.S. EPA uses a two-part evaluation. In the first part of this evaluation, the chemical is assigned a weight-of-evidence classification, which is related to how convincingly the scientific studies demonstrate that the chemical is carcinogenic to humans. In the second part of this evaluation, a cancer slope factor ("CSF") is calculated, which is a measure of the chemical's potency. U.S. EPA (U.S. EPA, 1989) estimates risks as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the potential carcinogen. This probability is defined as the incremental or excess lifetime cancer risk. The CSF is the 95 percent upper confidence limit on the slope of the low-dose linear portion of the dose-response curve as estimated by the multistage linear model.

The CSF directly relates the incremental risk of cancer over a lifetime (i.e., 70 years) to the degree of chemical exposure averaged over a lifetime. U.S. EPA (1991) established the standard default carcinogenic target risk level to correspond to a one-in-one million (i.e., 10^{-6}) incremental risk of an individual developing cancer over a lifetime as a result of exposure to the potential carcinogen from all significant exposure pathways for a given medium. Federal Regulations (40 CFR §300.430(e)(2)(i)(A)) provide a definition of an acceptable residual cancer risk range of 10^{-4} through 10^{-6} for the selection of remedial actions that protect human health and the environment. U.S. EPA has stated that remediation is generally not warranted for contaminated property if the cumulative cancer risk is less than 10^{-4} (1991). If remediation is undertaken at such a property, U.S. EPA has expressed a preference for cleanups that achieve the more protective end of this target risk range (1991). However, U.S. EPA acknowledges that remedial actions that achieve reductions in site risk anywhere within the 10^{-4} through 10^{-6} risk range may be acceptable after considering site-specific conditions (1991). The State of California has adopted 10^{-5} as the "no significant risk" level for protecting persons from exposure to chemicals in consumer products and commercial establishments under *The Safe Drinking Water and Toxic Enforcement Act*, which is commonly referred to as Proposition 65. At the Presidio, the target risk level for individual chemicals has been established at a lifetime incremental cancer risk of 10^{-6} (EKI, 2000).

C.1.4.3 <u>Sources of Toxicity Information</u>

Carcinogenic slope factors and non-carcinogenic reference doses are obtained from the following hierarchy of regulatory sources as described in the Cleanup Level Document (EKI, 2002), which is generally consistent with California Human Health Screening Levels ("CHHSLs"):

- Cal/EPA OEHHA Toxicity Criteria Database, dated 10 August 2005.
- U.S. EPA's computerized Integrated Risk Information System ("IRIS").

- U.S. EPA's Health Effects Assessment Summary Tables ("HEAST"), dated July, 1997.

- U.S. EPA's National Center for Environmental Assessment ("NCEA"), Draft Risk Assessment Issue Papers for individual chemicals.

- U.S. EPA Region IX Preliminary Remediation Goals ("PRG") Tables, October 2004.

Non-carcinogenic reference doses and carcinogenic slope factors for chemicals of concern at Building 937 are presented in Tables C-1 and C-2, respectively.

C.1.5 Exposure and Physical Parameters

Table C-3 summarizes exposure assumptions for the potentially exposed populations at Building 937. Exposure parameters are default values obtained from DTSC or U.S. EPA guidance documents, except for the exposure frequency and exposure time for recreational users, and the event duration for the teenage recreational user. Professional judgment was used to estimate these parameters because default values do not exist for these factors for recreational users. In addition, the averaging time is 75 years for carcinogenic effects, and is set equal to the exposure duration for non-carcinogenic effects, in accordance with the *Exposure Factors Handbook Volume I General Factors: Principles and Application* (US EPA, 1997).

Physical parameters, such as soil properties underneath Building 937 and building characteristics used to calculate RBTCs for soil gas and groundwater are shown in Table C-4. Whenever possible, physical parameters were based upon site-specific information or default values obtained from DTSC. Since Building 937 may be subdivided when it is leased to commercial businesses, two different scenarios are considered to develop soil gas and groundwater RBTCs: (1) Building 937 has not been subdivided (considers current approximate building dimensions), and (2) Building 937 has been subdivided.

As shown in Table C-4, the approximate current height of Building 937 is 30 feet. The height of the subdivided areas was assumed to be 366 cm (12 feet), considering that ventilation systems may be installed in the building and that the ceiling may be lowered when the building is subdivided into smaller areas.

C.2 CALCULATION OF RISK-BASED TARGET CONCENTRATIONS

The equations used to calculate RBTCs in indoor air, sub-slab vapor, soil gas data, and groundwater are presented in the following sections. RBTCs are developed for each potentially exposed population (see Section C.1.2) and for the current, site-specific building dimensions and for an assumed subdivided space, as discussed above.

RBTCs for indoor air are presented in Tables C-5 through C-10 and C-13 through C-18. RBTCs for indoor air are the same for the current, site-specific building dimensions and

for the assumed subdivided space. Tables C-5 through C-7 present carcinogenic and non-carcinogenic RBTCs for indoor air, sub-slab soil vapor, and soil gas for the current, site-specific building dimensions, for recreational users, teenager recreational users and commercial/industrial workers, respectively. Tables C-8 through C-10 present carcinogenic and non-carcinogenic RBTCs for indoor air, sub-slab soil vapor, and soil gas for the assumed subdivided space, for recreational users, teenager recreational users and commercial/industrial workers, respectively. Tables C-13 through C-15 present carcinogenic and non-carcinogenic RBTCs for indoor air and groundwater for the current, site-specific building dimensions for recreational users, teenager recreational users and commercial/industrial workers, respectively. Tables C-16 through C-18 present carcinogenic and non-carcinogenic RBTCs for indoor air and groundwater for the assumed subdivided space, for recreational users, teenager recreational users and commercial/industrial workers, respectively.

The minimum RBTCs for indoor air, sub-slab soil vapor, and soil gas for chemicals of concern in soil gas and the corresponding driving scenario are presented in Table C-12. The minimum RBTCs for indoor air and groundwater for chemicals of concern in groundwater and the corresponding driving scenario are presented in Table C-20. As shown in Tables C-12 and C-20, the commercial/industrial worker population under the assumption that Building 937 has been subdivided is the scenario driving the minimum RBTCs for all chemicals of concern.

C.2.1 Development of Risk-Based Target Concentrations for Indoor Air

For each volatile chemical of concern, chemical-specific risk-based target concentrations for indoor air for cancer risks (“$RBTC_{IA\text{-}c}$”) in units of µg/m^3 are calculated according to the following equations:

$$RBTC_{IA\text{-}c} = \frac{\text{Target Risk Level of } 10^{-6}}{CSF_i \times CF \times (\text{Inhalation}_{child} + \text{Inhalation}_{adult})}$$

where:

CF	Conversion Factor of 10^{-3} mg/ug
CSF_i	Inhalation Cancer Slope Factor $(mg/kg\text{-}d)^{-1}$ (chemical-specific, see Table C-2)
$RBTC_{IA\text{-}c}$	Risk-Based Target Concentration for Indoor Air for Carcinogenic COCs (ug/m^3)

The inhalation exposure to COCs for children, teenager and adult populations at Building 937 are estimated with the following equation:

$$\text{Inhalation} = \frac{IR \times ET \times EF \times ED}{BW \times AT}$$

where:

AT	Averaging Time (days) (population-specific, see Table C-3)
BW	Body Weight (kg) (population-specific, see Table C-3)
ED	Exposure Duration (years) (population-specific, see Table C-3)

EF	Exposure Frecuency (days/year) (population-specific, see Table C-3)
ET	Exposure Time (hr/day) (population-specific, see Table C-3)
IR	Air Inhalation Rate (m^3/hr or m^3/day) (population-specific, see Table C-3)

Exposure assumptions for the potentially exposed populations evaluated at Building 937 are presented in Table C-3. The appropriate values should be substituted into the equations to calculate $RBTC_{IA\text{-}c}$ values for the recreational, teenage recreational and commercial/industrial exposure scenarios.

For non-carcinogenic COCs, risk-based target concentrations for indoor air ("$RBTC_{IA\text{-}nc}$") are calculated with the following equation:

$$\mathrm{RBTC_{IA\text{-}nc}} = \frac{\mathrm{R}f\mathrm{D_i} \times \text{Target HI of 1}}{\mathrm{CF} \times (\mathrm{Inhalation_{child}})}$$

where:

CF	Conversion Factor of 10^{-3} mg/ug
$RBTC_{IA\text{-}nc}$	Risk-Based Target Concentration for Indoor Air for Non-Carcinogenic COCs (ug/m^3)
RfD_i	Inhalation Reference Dose (mg/kg-d) (chemical-specific, see Table C-1)

As above for carcinogens, the appropriate values should be substituted into the equations to calculate $RBTC_{IA\text{-}nc}$ values for the recreational, teenage recreational and commercial/industrial exposure scenarios.

C.2.2 Development of Risk-Based Target Concentrations for Sub-Slab Vapor

RBTCs for indoor air can be converted into equivalent RBTCs for sub-slab vapor using the following equation:

$$\mathrm{RBTC_{SS}} = \frac{RBTC_{IA}}{\alpha_{SS}}$$

where:

$RBTC_{IA}$	Risk-Based Target Concentration for Indoor Air (ug/m^3)
$RBTC_{SS}$	Risk-Based Target Concentration for Sub-Slab Vapor (ug/m^3)
α_{SS}	Sub-Slab Attenuation Factor (unitless)

As recommended in the DTSC Vapor Intrusion Guidance (DTSC, 2004), a sub-slab attenuation factor of 0.01 (Dawson, 2004) is used to convert RBTCs for indoor air into equivalent RBTCs for sub-slab vapor. Additionally, as requested by the DTSC, a sub-slab attenuation factor of 0.1 is also used for screening purposes (DTSC, 2005).

Tables C-5 through C-7 present carcinogenic and non-carcinogenic RBTCs for sub-slab vapor for the current, site-specific building dimensions, for recreational users, teenager

recreational users and commercial/industrial workers, respectively. Tables C-8 through C-10 present carcinogenic and non-carcinogenic RBTCs for sub-slab vapor for the assumed subdivided space, for recreational users, teenager recreational users and commercial/industrial workers, respectively.

The minimum RBTCs for sub-slab vapor for chemicals of concern and the corresponding risk driving scenario are presented in Table C-12. As shown in Table C-12, the commercial/industrial worker population under the assumption that Building 937 has been subdivided is the scenario driving the minimum RBTCs for all chemicals of concern.

C.2.3 Development of Risk-Based Target Concentrations for Soil Gas

Similarly to RBTCs for sub-slab vapor, RBTCs for indoor air can be converted into equivalent RBTCs for soil gas using the following equation:

$$\mathrm{RBTC_{SG}} = \frac{RBTC_{IA}}{\alpha_{SG}} xCF$$

where:

CF	Conversion Factor (0.001 m^3/L)
$RBTC_{IA}$	Risk-Based Target Concentration for Indoor Air (ug/m^3)
$RBTC_{SG}$	Risk-Based Target Concentration for Soil Gas (ug/L)
α_{SG}	Soil Gas Attenuation Factor (unitless)

The soil gas attenuation factors for COCs identified in soil gas are calculated using the Johnson and Ettinger (“J&E”) model for soil gas (SG-ADV.xls) as published by U.S. EPA (2004). The J&E model calculates a chemical-specific infinite source soil gas to indoor air attenuation factor in one of the intermediate calculations spreadsheets. This attenuation factor is the one used to calculate RBTCs for soil gas, using the equation shown above.

Soil gas attenuation factors are calculated for the two scenarios mentioned before, i.e., using current dimensions of Building 937 and assuming that the space inside Building 937 has been subdivided. The soil gas RBTCs are calculates at four different depths to represent the depth range of the actual soil gas samples collected at the Site (i.e., 3.5 to 5 feet below ground surface (“bgs”)). The soil gas attenuation factors calculated using the J&E model are presented in Table C-11. Electronic copies in *.pdf format of all of the J&E model SG-ADV.xls runs used to calculate the soil gas attenuation factors are included as Attachment C-1 on the compact disk included with this report.

Tables C-5 through C-7 present carcinogenic and non-carcinogenic RBTCs for soil gas for the current, site-specific building dimensions, for recreational users, teenager recreational users and commercial/industrial workers, respectively. Tables C-8 through

C-10 present carcinogenic and non-carcinogenic RBTCs for soil gas for the assumed subdivided space, for recreational users, teenager recreational users and commercial/industrial workers, respectively.

The minimum RBTCs for soil gas for the identified chemicals of concern in soil gas and the corresponding risk driving scenario are presented in Table C-12. As shown in Table C-12, the commercial/industrial worker population under the assumption that Building 937 has been subdivided is the scenario driving the minimum RBTCs for all chemicals of concern.

C.2.4 Development of Risk-Based Target Concentrations for Groundwater

Similarly to RBTCs for sub-slab vapor and soil gas, RBTCs for indoor air can be converted into equivalent RBTCs for groundwater using the following equation:

$$\mathrm{RBTC}_{\mathrm{GW}} = \frac{RBTC_{IA}}{\alpha_{GW}} xCF$$

where:

CF	Conversion Factor (0.001 m^3/L)
$RBTC_{IA}$	Risk-Based Target Concentration for Indoor Air (ug/m^3)
$RBTC_{SG}$	Risk-Based Target Concentration for Groundwater (ug/L)
α_{GW}	Groundwater Attenuation Factor (unitless)

The groundwater attenuation factors for COCs identified in groundwater are calculated using the J&E model for groundwater (GW-ADV.xls) as published by U.S. EPA (2004). The J&E model calculates a chemical-specific infinite source groundwater to indoor air attenuation factor in one of the intermediate calculations spreadsheets. This attenuation factor is the one used to calculate RBTCs for groundwater, using the equation shown above.

As before, groundwater attenuation factors are calculated using current dimensions of Building 937 and assuming that the space inside Building 937 has been subdivided. The groundwater attenuation factors calculated using the J&E model are presented in Table C-19. All of the J&E model GW-ADV.xls runs used to calculate the groundwater attenuation factors are included in Attachment C-2.

Tables C-13 through C-15 present carcinogenic and non-carcinogenic RBTCs for groundwater for the current, site-specific building dimensions, for recreational users, teenager recreational users and commercial/industrial workers, respectively. Tables C-16 through C-18 present carcinogenic and non-carcinogenic RBTCs for soil gas for the assumed subdivided space, for recreational users, teenager recreational users and commercial/industrial workers, respectively.

The minimum RBTCs for indoor air and groundwater for chemicals of concern in groundwater and the corresponding risk driving scenario are presented in Table C-20. As shown in Table C-20, the commercial/industrial worker population under the assumption that Building 937 has been subdivided is the scenario driving the minimum RBTCs for all chemicals of concern in groundwater.

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LIST OF TABLES

Table C-1
Non-Carcinogenic Toxicity Factors for Chemicals of Concern
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Compound	Inhalation Reference Dose ("RfDi") (a) (mg/kg-day)	Non-Carcinogenic Effects	Source (b)
Benzene	0.017	Hematological abnormalities; nervous system	OEHHA
Bromodichloromethane	0.02	Renal cytomegaly	IRIS-RR
Chlorobenzene	0.29	Alimentary system; kidney; reproductive system	OEHHA
Chloroform	0.086	Fatty cyst formation in liver	OEHHA
Chloromethane	0.026	Cerebellar lesions	IRIS
1,1-Dichloroethane	0.143	Kidney damage	HEAST
Methylene Chloride	0.114	Cardiovascular system; nervous system	OEHHA
Tetrachloroethene	0.01	Hepatotoxicity; weight gain; kidney damage	OEHHA
Toluene	0.086	Liver and kidney weight changes; nervous and respiratory system	OEHHA
1,1,1-Trichloroethane	0.29	Nervous system and liver effects	OEHHA
Trichloroethene	0.17	Nervous system; eyes	OEHHA
1,2,4-Trimethylbenzene	0.0017	--	PRGs
1,3,5-Trimethylbenzene	0.0017	--	PRGs
Xylenes	0.20	Hyperactivity/decreased body weight; nervous and respiratory system	OEHHA

Notes
(a) Chronic reference exposure levels (RELs) are converted to inhalation RfDs using the equation:

RfDi (mg/kg-day) = REL ($\mu g/m^3$) x (20 m^3/day) / (70 kg) x (0.001 mg/μg)

(b) Reference doses ("RfDs") were obtained from the following sources, in order of preference:
1. California EPA Office of Environmental Health Hazard Assessment ("OEHHA") table: *All Chronic Reference Exposure Levels Adopted by OEHHA as of February 2005* (http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html).
2. U.S. Environmental Protection Agency Integrated Risk Information System ("IRIS"), 2006
3. U.S. EPA 1997 Health Effects Assessment Summary Tables ("HEAST")
4. U.S. EPA National Center for Environmental Assessment Risk Assessment Issue Papers ("NCEA")
5. U.S. EPA Region IX PRG Tables (October 2004) ("PRGs")

Abbreviations
"--" = no available data
mg/kg-day = milligrams per kilograms per day
RR = route to route extrapolation

Table C-2
Carcinogenic Toxicity Information for Chemicals of Concern
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Compound	Weight of Evidence Classification (a)	Inhalation Carcinogenic Slope Factor ("CSFi") $(mg/kg\text{-}d)^{-1}$	Source (b)
Benzene	A	0.1	OEHHA
Bromodichloromethane	B2	0.13	OEHHA
Chlorobenzene	D	--	IRIS
Chloroform	B2	0.019	OEHHA
Chloromethane	D	--	IRIS
1,1-Dichloroethane	C	0.0057	OEHHA
Methylene Chloride	B2	0.0035	OEHHA
Tetrachloroethene	--	0.021	OEHHA
Toluene	--	--	--
1,1,1-Trichloroethane	--	--	--
Trichloroethene	--	0.007	OEHHA
1,2,4-Trimethylbenzene	--	--	--
1,3,4-Trimethylbenzene	--	--	--
Xylenes	--	--	--

Notes
(a) U.S. EPA weight-of-evidence classification is as follows:
A = Human Carcinogen
B1 or B2 = Probable Human Carcinogen; B1 indicates that limited human data are available; B2 indicates that there is sufficient evidence in animals and inadequate or no evidence in humans.
C = Possible Human Carcinogen
D = Not Classifiable as to Human Carcinogenicity
E = Evidence of Non-Carcinogenicity for Humans
Weight-of-evidence information obtained from the U.S. Environmental Protection Agency Integrated Risk Information System database ("IRIS"); the July 1997 U.S. EPA Health Effects Assessment Summary Tables ("HEAST"); or the U.S. EPA National Center for Environmental Assessment Risk Assessment Issue Papers ("NCEA"); in order of precedence.
(b) Slope factors were obtained from the following sources, in order of preference:
1. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment ("OEHHA"), *OEHHA Cancer Potency Factors* table, updated 10 August 2005 (http://www.oehha.ca.gov/risk/pdf/cancerpotalpha81005.pdf)
2. U.S. EPA Integrated Risk Information System database (IRIS), 2006
3. U.S. EPA 1997 Health Effects Assessment Summary Tables ("HEAST")
4. U.S. EPA National Center for Environmental Assessment Risk Assessment Issue Papers ("NCEA")
5. U.S. EPA Region IX PRG Tables (October 2004) ("PRGs")

Abbreviations
"--" = no available data or not applicable
mg/kg-day = milligrams per kilograms per day

Table C-3
Exposure Assumptions
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Parameter	Variable	Value	Units	Reference (a)
Air Inhalation Rate	**IRa**			
Adult - Recreational		1.6	m^3/hr	U.S. EPA, 1997 (b)
Child - Recreational		1.2	m^3/hr	U.S. EPA, 1997 (b)
Teenager - Recreational		1.9	m^3/hr	U.S. EPA, 1997 (c)
Adult - Commercial/Industrial		14	m^3/day	U.S. EPA, 1997 (d); DTSC, 2005
Averaging Time	**AT**			
Non-Carcinogens				
Recreational (child)		2,190	days	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005
Teenage Recreational (6 years)		2,190	days	Professional Judgment
Commercial/Industrial		9,125	days	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005
Carcinogens				
Recreational/Commercial/Industrial (75 years)		27,375	days	U.S. EPA, 1997
Body Weight	**BW**			
Adult		70	kg	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005
Child		15	kg	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005
Teenager		45	kg	U.S. EPA, 1997 (e)
Exposure Duration	**ED**			
Recreational				
Carcinogenic (child)		6	years	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005
Carcinogenic (adult)		24	years	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005
Non-carcinogenic (child)		6	years	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005
Teenage Recreational				
Carcinogenic and Non-Carcinogenic		6	years	Professional Judgment
Commercial/Industrial				
Carcinogenic and Non-Carcinogenic		25	years	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005
Exposure Frequency	**EF**			
Recreational--Child and Adult		150	days/year	Professional Judgment
Recreational--Teenager		250	days/year	Professional Judgment
Commercial/Industrial		250	days/year	U.S. EPA, 1991; DTSC, 1996; DTSC, 2005

Table C-3
Exposure Assumptions
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Parameter	Variable	Value	Units	Reference (a)
Exposure Time	**ET**			
Recreational--Adult		3	hr/day	Professional Judgment
Recreational--Child		3	hr/day	Professional Judgment
Recreational--Teenager		3	hr/day	Professional Judgment

Notes
(a) References for exposure parameter values are as follows:

- U.S. EPA. 25 March 1991. *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual, Supplemental Guidance, Standard Default Exposure Factors.* Interim Final. OSWER Directive 9285.6-03.
- U.S. EPA. August 1997. *Exposure Factors Handbook Volume I General Factors: Principles and Applications.* Office of Research and Development. EPA 600/P-95/002F.
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- DTSC. October 2005. *Human Health Risk Assessment Note 1,* Human and Ecological Risk Division, 27 October 2005.

(b) Inhalation rate based on moderate activity, Table 5-23 from U.S. EPA 1997.
(c) Teenage inhalation rate based on heavy activity, Tables 5-23 and 5-27 from U.S. EPA 1997.
(d) Commercial inhalation rate assumes a "moderate industrial job" with a daily work inhalation rate calculated based on approximately 2 hours of light activity, 4 hours of moderate activity, and 2 hours of heavy activity. References: U.S. EPA 1997 and personal communication with Dr. Kimiko Klein, DTSC.
(e) Teenage body weight is based on mean for boys and girls aged 12 years, Table 7-3 from U.S. EPA 1997.

Table C-4
Physical Properties
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Parameter	Symbol	Unit	Value	Reference
Sand				
Thickness	--	ft	2	Site-specific data, see Table 8 (sample 937SB112[1])
Soil dry bulk density	ρ_b	g/cm^3	1.51	Site-specific data, see Table 8 (sample 937SB112[1])
Total soil porosity	n	--	0.454	Site-specific data, see Table 8 (sample 937SB112[1])
Soil air-filled porosity	θa	--	0.279	Site-specific data, see Table 8 (sample 937SB112[1])
Soil water-filled porosity	θw	--	0.176	Site-specific data, see Table 8 (sample 937SB112[1])
Soil				
Soil dry bulk density	ρ_b	g/cm^3	1.68	Site-specific data, see Table 8 (sample 937SB113[2])
Total soil porosity	n	--	0.388	Site-specific data, see Table 8 (sample 937SB113[2])
Soil air-filled porosity	θ_a	--	0.176	Site-specific data, see Table 8 (sample 937SB113[2])
Soil water-filled porosity	θ_w	--	0.213	Site-specific data, see Table 8 (sample 937SB113[2])
Soil temperature	T	°C	20	Site-specific data
Groundwater				
Depth to groundwater table		ft	5	Site-specific data
Building 937				
Length of building	L_B	cm	4,880	Site-specific data
Width of building	W_B	cm	3,350	Site-specific data
Height of building	H_B	cm	910	Site-specific data
Indoor air exchange rate	ER	hr^{-1}	0.25	Default value vapor intrusion model
Indoor pressure differential	ΔP	g/cm-s^2	40	Default value vapor intrusion model
Floor wall seam crack width	w	cm	0.1	Default value vapor intrusion model
Soil gas advection rate	Q_{soil}	L/m	5	Default value vapor intrusion model
Building - Subdivided Space				
Length of subdivided space	L_B	cm	1,000	Default value vapor intrusion model
Width of subdivided space	W_B	cm	1,000	Default value vapor intrusion model
Height of subdivided space	H_B	cm	366	Equivalent to 12 feet

Abbreviations:
"--" = no available data or not applicable
°C = degrees Celsius
cm = centimeter
g/cm^3 = grams per cubic centimeters
g/cm-s^2 = grams per centimeter per square seconds
hr = hour
L/min = liters per minute

Table C-5
Risk-Based Target Concentrations - Recreational Land Use: Child and Adult
Building Parameters: Site-Specific
Indoor Air, Sub-Slab Vapor, and Soil Gas
Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (child)							Values Based on 10^{-6} Incremental Cancer Risk (child+adult)						
	RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)				RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)			
		α_{SS}=0.1	α_{SS}=0.01	at 3.5 feet bgs	at 4 feet bgs	at 4.5 feet bgs	at 5 feet bgs		α_{SS}=0.1	α_{SS}=0.01	at 3.5 feet bgs	at 4 feet bgs	at 4.5 feet bgs	at 5 feet bgs
	$RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	$RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	$RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	$RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	$RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	$RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	$RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{SG\text{-}nc}$ ($\mu g/L$)
Benzene	170	1,700	17,000	2,500	2,600	2,700	2,700	0.59	5.9	59	8.6	8.9	9.2	9.6
Chloroform	870	8,700	87,000	12,000	13,000	13,000	14,000	3.1	31	310	44	46	47	49
Chloromethane	260	2,600	26,000	3,600	3,700	3,800	3,900	--	--	--	--	--	--	--
1,1-Dichloroethane	1,400	14,000	140,000	21,000	22,000	23,000	24,000	10.4	100	1,000	160	160	170	180
Methylene Chloride	1,200	12,000	120,000	17,000	18,000	18,000	19,000	16.9	170	1,700	240	250	260	260
Tetrachloroethene	100	1,000	10,000	1,500	1,600	1,600	1,700	2.8	28	280	42	44	46	48
Toluene	870	8,700	87,000	13,000	13,000	14,000	14,000	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2,900	29,000	290,000	43,000	45,000	47,000	48,000	--	--	--	--	--	--	--
Trichloroethene	1,700	17,000	170,000	25,000	26,000	27,000	28,000	8.4	84	840	120	130	140	140
1,2,4-Trimethylbenzene	20	200	2,000	310	330	340	360	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	20	200	2,000	310	330	340	360	--	--	--	--	--	--	--
Xylenes	2,000	20,000	200,000	30,000	31,000	32,000	33,000	--	--	--	--	--	--	--

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for sub-slab vapor equals the RBTC for indoor air divided by the sub-slab attenuation factor (α_{SS}).

(c) The RBTC for soil gas equals the RBTC for indoor air divided by the soil gas attenuation factor (α_{SG}) (see Table C-11).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

α_{SS} = sub-slab attenuation factor

bgs = below ground surface

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA\text{-}nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA\text{-}c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{SG\text{-}c}$ = RBTC for soil gas for carcinogenic COCs

$RBTC_{SG\text{-}nc}$ = RBTC for soil gas for non-carcinogenic COCs

$RBTC_{SS\text{-}nc}$ = RBTC for sub-slab vapor for non-carcinogenic COCs

$RBTC_{SS\text{-}c}$ = RBTC for sub-slab vapor for carcinogenic COCs

µg/L = micrograms per liter

µg/m³ = micrograms per cubic meter

Table C-6

Risk-Based Target Concentrations - Recreational Land Use: Teenager

Building Parameters: Site-Specific

Indoor Air, Sub-Slab Vapor, and Soil Gas

Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (teen)							Values Based on 10^{-6} Incremental Cancer Risk (teen)						
	RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)				RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)			
	$RBTC_{IA-nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS-nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS-nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	$RBTC_{IA-nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS-nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS-nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)
Benzene	200	2,000	20,000	2,900	3,000	3,100	3,200	1.4	14	140	21	22	23	23
Chloroform	990	9,900	99,000	14,000	15,000	15,000	15,000	7.6	76	760	110	110	110	120
Chloromethane	300	3,000	30,000	4,200	4,300	4,400	4,500	--	--	--	--	--	--	--
1,1-Dichloroethane	1,700	17,000	170,000	25,000	27,000	28,000	29,000	25	250	2,500	380	390	410	430
Methylene Chloride	1,300	13,000	130,000	19,000	19,000	20,000	20,000	41	410	4,100	590	610	630	650
Tetrachloroethene	120	1,200	12,000	1,800	1,900	2,000	2,000	6.9	69	690	100	110	110	120
Toluene	990	9,900	99,000	14,000	15,000	16,000	16,000	--	--	--	--	--	--	--
1,1,1-Trichloroethane	3,300	33,000	330,000	49,000	51,000	53,000	55,000	--	--	--	--	--	--	--
Trichloroethene	2,000	20,000	200,000	30,000	31,000	32,000	33,000	21	210	2,100	300	320	330	340
1,2,4-Trimethylbenzene	20	200	2,000	300	320	330	350	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	20	200	2,000	300	320	340	350	--	--	--		--	--	
Xylenes	2,300	23,000	230,000	34,000	36,000	37,000	38,000	--	--	--	--	--	--	--

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for sub-slab vapor equals the RBTC for indoor air divided by the sub-slab attenuation factor (α_{SS}).

(c) The RBTC for soil gas equals the RBTC for indoor air divided by the soil gas attenuation factor (α_{SG}) (see Table C-11).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

α_{SS} = sub-slab attenuation factor

bgs = below ground surface

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA-nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA-c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{SG-c}$ = RBTC for soil gas for carcinogenic COCs

$RBTC_{SG-nc}$ = RBTC for soil gas for non-carcinogenic COCs

$RBTC_{SS-nc}$ = RBTC for sub-slab vapor for non-carcinogenic COCs

$RBTC_{SS-c}$ = RBTC for sub-slab vapor for carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-7
Risk-Based Target Concentrations - Commercial/Industrial Land Use
Building Parameters: Site-Specific
Indoor Air, Sub-Slab Vapor, and Soil Gas
Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (adult)							Values Based on 10^{-6} Incremental Cancer Risk (adult)						
	RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)				RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)			
	$RBTC_{IA-nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS-nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS-nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	$RBTC_{IA-nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS-nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS-nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)
Benzene	120	1,200	12,000	1,700	1,800	1,900	1,900	0.22	2	22	3.2	3.3	3.4	3.5
Chloroform	630	6,300	63,000	9,000	9,200	9,500	9,800	1.2	12	120	16	17	17	18
Chloromethane	190	1,900	19,000	2,600	2,700	2,800	2,900	--	--	--	--	--	--	--
1,1-Dichloroethane	1,000	10,000	100,000	15,000	16,000	16,000	17,000	3.8	38	380	57	60	62	65
Methylene Chloride	830	8,300	83,000	12,000	12,000	13,000	13,000	6.3	63	630	89	92	95	98
Tetrachloroethene	73	730	7,300	1,100	1,100	1,200	1,200	1.0	10	100	16	16	17	18
Toluene	630	6,300	63,000	9,200	9,500	9,900	10,000	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2,100	21,000	210,000	31,000	32,000	34,000	35,000	--	--	--	--	--	--	--
Trichloroethene	1,200	12,000	120,000	18,000	18,000	19,000	20,000	3.1	31	310	46	48	50	52
1,2,4-Trimethylbenzene	12	120	1,200	190	200	210	220	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	12	120	1,200	190	200	210	220	--	--	--	--	--	--	--
Xylenes	1,500	15,000	150,000	22,000	23,000	24,000	25,000	--	--	--	--	--	--	--

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for sub-slab vapor equals the RBTC for indoor air divided by the sub-slab attenuation factor (α_{SS}).

(c) The RBTC for soil gas equals the RBTC for indoor air divided by the soil gas attenuation factor (α_{SG}) (see Table C-11).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

α_{SS} = sub-slab attenuation factor

bgs = below ground surface

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA-nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA-c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{SG-c}$ = RBTC for soil gas for carcinogenic COCs

$RBTC_{SG-nc}$ = RBTC for soil gas for non-carcinogenic COCs

$RBTC_{SS-nc}$ = RBTC for sub-slab vapor for non-carcinogenic COCs

$RBTC_{SS-c}$ = RBTC for sub-slab vapor for carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-8

Risk-Based Target Concentrations - Recreational Land Use: Child and Adult

Building Parameters: Subdivided Space

Indoor Air, Sub-Slab Vapor, and Soil Gas

Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	**Values Based on Non-Cancer Hazard at HQ = 1.0 (child)**							**Values Based on 10^{-6} Incremental Cancer Risk (child+adult)**						
	RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)				RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)			
	$RBTC_{IA-nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS-nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS-nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	$RBTC_{IA-nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS-nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS-nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG-nc}$ ($\mu g/L$)
Benzene	170	1,700	17,000	190	230	270	300	0.59	5.9	59	0.7	0.8	0.9	1.1
Chloroform	870	8,700	87,000	880	1,000	1,200	1,300	3.1	31	310	3.2	3.7	4.3	4.8
Chloromethane	260	2,600	26,000	230	270	310	350	--	--	--	--	--	--	--
1,1-Dichloroethane	1,400	14,000	140,000	1,800	2,200	2,500	2,900	10	100	1,000	13	16	19	21
Methylene Chloride	1,200	12,000	120,000	1,200	1,500	1,700	1,900	17	170	1,700	17	21	24	27
Tetrachloroethene	100	1,000	10,000	130	160	180	210	2.8	28	280	3.7	4.5	5.2	5.9
Toluene	870	8,700	87,000	1,000	1,200	1,400	1,600	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2,900	29,000	290,000	3,600	4,300	5,000	5,700	--	--	--	--	--	--	--
Trichloroethene	1,700	17,000	170,000	2,100	2,500	2,900	3,300	8.4	84	840	10	12	14	16
1,2,4-Trimethylbenzene	20	200	2,000	30	37	43	49	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	20	200	2,000	31	37	43	49	--	--	--	--	--	--	--
Xylenes	2,000	20,000	200,000	2,500	3,000	3,500	3,900	--	--	--	--	--	--	--

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for sub-slab vapor equals the RBTC for indoor air divided by the sub-slab attenuation factor (α_{SS}).

(c) The RBTC for soil gas equals the RBTC for indoor air divided by the soil gas attenuation factor (α_{SG}) (see Table C-11).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

α_{SS} = sub-slab attenuation factor

bgs = below ground surface

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA-nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA-c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{SG-c}$ = RBTC for soil gas for carcinogenic COCs

$RBTC_{SG-nc}$ = RBTC for soil gas for non-carcinogenic COCs

$RBTC_{SS-nc}$ = RBTC for sub-slab vapor for non-carcinogenic COCs

$RBTC_{SS-c}$ = RBTC for sub-slab vapor for carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-9
Risk-Based Target Concentrations - Recreational Land Use: Teenager
Building Parameters: Subdivided Space
Indoor Air, Sub-Slab Vapor, and Soil Gas

Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (teen)							Values Based on 10^{-6} Incremental Cancer Risk (teen)						
	RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)				RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)			
	$RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)
Benzene	200	2,000	20,000	230	270	310	360	1.4	14	140	1.6	2.0	2.3	2.6
Chloroform	990	9,900	99,000	1,000	1,200	1,400	1,500	7.6	76	760	7.7	9.1	10.4	12
Chloromethane	300	3,000	30,000	270	310	360	400	--	--	--	--	--	--	--
1,1-Dichloroethane	1,600	16,000	160,000	2,100	2,500	2,900	3,300	25	250	2,500	33	39	45	52
Methylene Chloride	1,300	13,000	130,000	1,300	1,600	1,800	2,100	41	410	4,100	43	50	58	65
Tetrachloroethene	120	1,200	12,000	160	190	220	250	6.9	69	690	9.1	11	13	14
Toluene	990	9,900	99,000	1,100	1,400	1,600	1,800	--	--	--	--	--	--	--
1,1,1-Trichloroethane	3,300	33,000	330,000	4,100	4,900	5,700	6,500	--	--	--	--	--	--	--
Trichloroethene	2,000	20,000	200,000	2,500	3,000	3,400	3,900	20.6	210	2,100	26	30	35	40
1,2,4-Trimethylbenzene	20	200	2,000	30	37	43	49	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	20	200	2,000	31	37	43	49	--	--	--	--	--	--	--
Xylenes	2,300	23,000	230,000	2,900	3,400	4,000	4,500	--	--	--	--	--	--	--

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for sub-slab vapor equals the RBTC for indoor air divided by the sub-slab attenuation factor (α_{SS}).

(c) The RBTC for soil gas equals the RBTC for indoor air divided by the soil gas attenuation factor (α_{SG}) (see Table C-11).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

α_{SS} = sub-slab attenuation factor

bgs = below ground surface

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA\text{-}nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA\text{-}c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{SG\text{-}c}$ = RBTC for soil gas for carcinogenic COCs

$RBTC_{SG\text{-}nc}$ = RBTC for soil gas for non-carcinogenic COCs

$RBTC_{SS\text{-}nc}$ = RBTC for sub-slab vapor for non-carcinogenic COCs

$RBTC_{SS\text{-}c}$ = RBTC for sub-slab vapor for carcinogenic COCs

µg/L = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-10
Risk-Based Target Concentrations - Commercial/Industrial Land Use
Building Parameters: Subdivided Space
Indoor Air, Sub-Slab Vapor, and Soil Gas

Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (adult)							Values Based on 10^{-6} Incremental Cancer Risk (adult)						
	RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)				RBTC for Indoor Air (a)	RBTC for Sub-Slab Vapor (b)		RBTC for Soil Gas (c)			
	$RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	$RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	α_{SS}=0.1 $RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	α_{SS}=0.01 $RBTC_{SS\text{-}nc}$ ($\mu g/m^3$)	at 3.5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 4 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 4.5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)	at 5 feet bgs $RBTC_{SG\text{-}nc}$ ($\mu g/L$)
Benzene	120	1,200	12,000	140	160	190	210	0.22	2.2	22	0.25	0.30	0.34	0.39
Chloroform	630	6,300	63,000	640	750	860	980	1.15	11.5	115	1.2	1.4	1.6	1.8
Chloromethane	190	1,900	19,000	170	200	230	250	--	--	--	--	--	--	--
1,1-Dichloroethane	1,000	10,000	100,000	1,300	1,600	1,800	2,000	3.8	38.4	380	5.0	6.0	6.9	7.9
Methylene Chloride	830	8,300	83,000	860	1,000	1,200	1,300	6.3	62.6	630	6.5	7.6	8.8	9.9
Tetrachloroethene	70	700	7,000	93	110	130	150	1.0	10	100	1.4	1.7	1.9	2.2
Toluene	630	6,300	63,000	730	860	990	1,100	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2,100	21,000	210,000	2,600	3,100	3,600	4,100	--	--	--	--	--	--	--
Trichloroethene	1,200	12,000	120,000	1,500	1,800	2,000	2,300	3.1	31	310	3.9	4.6	5.3	6.1
1,2,4-Trimethylbenzene	12	120	1,200	19	23	26	30	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	12	120	1,200	19	23	27	30	--	--	--	--	--	--	--
Xylenes	1,500	15,000	150,000	1,900	2,200	2,600	3,000	--	--	--	--	--	--	--

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for sub-slab vapor equals the RBTC for indoor air divided by the sub-slab attenuation factor (α_{SS}).

(c) The RBTC for soil gas equals the RBTC for indoor air divided by the soil gas attenuation factor (α_{SG}) (see Table C-11).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

α_{SS} = sub-slab attenuation factor

bgs = below ground surface

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA\text{-}nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA\text{-}c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{SG\text{-}c}$ = RBTC for soil gas for carcinogenic COCs

$RBTC_{SG\text{-}nc}$ = RBTC for soil gas for non-carcinogenic COCs

$RBTC_{SS\text{-}nc}$ = RBTC for sub-slab vapor for non-carcinogenic COCs

$RBTC_{SS\text{-}c}$ = RBTC for sub-slab vapor for carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-11
Soil Gas Attenuation Factors for Chemicals of Concern
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Compound	Soil Gas Attenuation Factor Building Parameters: Subdivided Space (a)				Soil Gas Attenuation Factor Building Parameters: Site-Specific (a)			
	3.5 feet bgs α_{SG} (unitless)	**4 feet bgs** α_{SG} (unitless)	**4.5 feet bgs** α_{SG} (unitless)	**5 feet bgs** α_{SG} (unitless)	**3.5 feet bgs** α_{SG} (unitless)	**4 feet bgs** α_{SG} (unitless)	**4.5 feet bgs** α_{SG} (unitless)	**5 feet bgs** α_{SG} (unitless)
Benzene	8.7E-04	7.4E-04	6.4E-04	5.6E-04	6.9E-05	6.6E-05	6.4E-05	6.2E-05
Chloroform	9.9E-04	8.4E-04	7.3E-04	6.5E-04	7.0E-05	6.8E-05	6.6E-05	6.4E-05
Chloromethane	1.1E-03	9.6E-04	8.4E-04	7.5E-04	7.2E-05	7.0E-05	6.8E-05	6.7E-05
1,1-Dichloroethane	7.7E-04	6.4E-04	5.6E-04	4.9E-04	6.7E-05	6.4E-05	6.2E-05	5.9E-05
Methylene Chloride	9.7E-04	8.2E-04	7.1E-04	6.3E-04	7.0E-05	6.8E-05	6.6E-05	6.4E-05
Tetrachloroethene	7.5E-04	6.3E-04	5.4E-04	4.8E-04	6.7E-05	6.4E-05	6.1E-05	5.9E-05
Toluene	8.7E-04	7.3E-04	6.3E-04	5.6E-04	6.9E-05	6.6E-05	6.4E-05	6.2E-05
1,1,1-Trichloroethane	8.0E-04	6.7E-04	5.8E-04	5.1E-04	6.7E-05	6.5E-05	6.2E-05	6.0E-05
Trichloroethene	8.1E-04	6.8E-04	5.9E-04	5.1E-04	6.8E-05	6.5E-05	6.3E-05	6.0E-05
1,2,4-Trimethylbenzene	6.6E-04	5.5E-04	4.7E-04	4.1E-04	6.4E-05	6.1E-05	5.9E-05	5.6E-05
1,3,5-Trimethylbenzene	6.5E-04	5.4E-04	4.7E-04	4.1E-04	6.4E-05	6.1E-05	5.8E-05	5.6E-05
Xylenes	8.0E-04	6.7E-04	5.8E-04	5.1E-04	6.7E-05	6.5E-05	6.2E-05	6.0E-05

Notes
(a) The soil gas attenuation factor (α_{SG}) was calculated using the Johnson and Ettinger vapor intrusion computer model SG-ADV.xls.

Abbreviations
α_{SG} = soil gas attenuation factor
bgs = below ground surface

Table C-12
Minimum Risk-Based Target Concentrations
Indoor Air, Sub-Slab Vapor, and Soil Gas
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Compound	Minimum RBTC for Indoor Air	Minimum Sub-Slab Vapor		Minimum RBTC for Soil Gas				Driving Scenario
		α_{SS}=0.1	α_{SS}=0.01	at 3.5 feet bgs	at 4 feet bgs	at 4.5 feet bgs	at 5 feet bgs	
	(μg/m^3)	(μg/m^3)	(μg/m^3)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	
Benzene	0.22	2.2	22	0.25	0.30	0.34	0.39	Worker - Cancer - Subdivided Space
Chloroform	1.15	11.5	115	1.2	1.4	1.6	1.8	Worker - Cancer - Subdivided Space
Chloromethane	190	1,900	19,000	170	200	230	250	Worker - Non-Cancer - Subdivided Space
1,1-Dichloroethane	3.8	38	380	5.0	6.0	6.9	7.9	Worker - Cancer - Subdivided Space
Methylene Chloride	6.3	63	630	6.5	7.6	8.8	9.9	Worker - Cancer - Subdivided Space
Tetrachloroethene	1.0	10	100	1.4	1.7	1.9	2.2	Worker - Cancer - Subdivided Space
Toluene	630	6,300	63,000	730	860	990	1,100	Worker - Non-Cancer - Subdivided Space
1,1,1-Trichloroethane	2,100	21,000	210,000	2,600	3,100	3,600	4,100	Worker - Non-Cancer - Subdivided Space
Trichloroethene	3.1	31	310	3.9	4.6	5.3	6.1	Worker - Cancer - Subdivided Space
1,2,4-Trimethylbenzene	12	120	1,200	19	23	26	30	Worker - Non-Cancer - Subdivided Space
1,3,5-Trimethylbenzene	12	120	1,200	19	23	27	30	Worker - Non-Cancer - Subdivided Space
Xylenes	1,500	15,000	150,000	1,900	2,200	2,600	3,000	Worker - Non-Cancer - Subdivided Space

Abbreviations
α_{SS} = sub-slab attenuation factor
bgs = below ground surface
RBTC = Risk-Based Target Concentration
μg/L = micrograms per liter
μg/m^3 = micrograms per cubic meter

Table C-13
Risk-Based Target Concentrations - Recreational Land Use: Child and Adult
Building Parameters: Site-Specific
Indoor Air and Groundwater
Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (child)		Values Based on 10^{-6} Incremental Cancer Risk (child+adult)	
	RBTC for Indoor Air (a) $RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW\text{-}nc}$ ($\mu g/L$)	RBTC for Indoor Air (a) $RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW\text{-}nc}$ ($\mu g/L$)
Bromodichloromethane	200	23,000	0.5	51
Chlorobenzene	2,900	540,000	--	--
Chloroform	870	130,000	3.1	480
Tetrachloroethene	100	35,000	2.8	990
Trichloroethene	1,700	470,000	8.4	2,300

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for groundwater equals the RBTC for indoor air divided by the groundwater attenuation factor (α_{GW}) (see Table C-19).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA\text{-}nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA\text{-}c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{GW\text{-}c}$ = RBTC for groundwater for carcinogenic COCs

$RBTC_{GW\text{-}nc}$ = RBTC for groundwater for non-carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-14
Risk-Based Target Concentrations - Recreational Land Use: Teenager
Building Parameters: Site-Specific
Indoor Air and Groundwater

Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	**Values Based on Non-Cancer Hazard at HQ = 1.0 (teen)**		**Values Based on 10^{-6} Incremental Cancer Risk (teen)**	
	RBTC for Indoor Air (a) $RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW\text{-}nc}$ ($\mu g/L$)	RBTC for Indoor Air (a) $RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW\text{-}nc}$ ($\mu g/L$)
Bromodichloromethane	230	26,000	1.1	120
Chlorobenzene	3,290	610,000	--	--
Chloroform	990	150,000	7.6	1,200
Tetrachloroethene	120	42,000	6.9	2,400
Trichloroethene	2,000	550,000	21	5,700

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for groundwater equals the RBTC for indoor air divided by the groundwater attenuation factor (α_{GW}) (see Table C-19).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA\text{-}nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA\text{-}c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{GW\text{-}c}$ = RBTC for groundwater for carcinogenic COCs

$RBTC_{GW\text{-}nc}$ = RBTC for groundwater for non-carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-15
Risk-Based Target Concentrations - Commercial/Industrial Land Use
Building Parameters: Site-Specific
Indoor Air and Groundwater

Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (adult)		Values Based on 10^{-6} Incremental Cancer Risk (adult)	
	RBTC for Indoor Air (a) $RBTC_{IA-nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW-nc}$ ($\mu g/L$)	RBTC for Indoor Air (a) $RBTC_{IA-nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW-nc}$ ($\mu g/L$)
Bromodichloromethane	150	17,000	0.2	19
Chlorobenzene	2,090	390,000	--	--
Chloroform	630	97,000	1.2	180
Tetrachloroethene	73	26,000	1.0	370
Trichloroethene	1,200	330,000	3.1	870

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for groundwater equals the RBTC for indoor air divided by the groundwater attenuation factor (α_{GW}) (see Table C-19).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA-nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA-c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{GW-c}$ = RBTC for groundwater for carcinogenic COCs

$RBTC_{GW-nc}$ = RBTC for groundwater for non-carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-16
Risk-Based Target Concentrations - Recreational Land Use: Child and Adult
Building Parameters: Subdivided Space
Indoor Air and Groundwater

Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (child)		Values Based on 10^{-6} Incremental Cancer Risk (child+adult)	
	RBTC for Indoor Air (a) $RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW\text{-}nc}$ ($\mu g/L$)	RBTC for Indoor Air (a) $RBTC_{IA\text{-}nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW\text{-}nc}$ ($\mu g/L$)
Bromodichloromethane	200	8,100	0.5	18
Chlorobenzene	2,900	200,000	--	--
Chloroform	870	50,000	3.1	180
Tetrachloroethene	100	14,000	2.8	380
Trichloroethene	1,700	180,000	8.4	900

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for groundwater equals the RBTC for indoor air divided by the groundwater attenuation factor (α_{GW}) (see Table C-19).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA\text{-}nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA\text{-}c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{GW\text{-}c}$ = RBTC for groundwater for carcinogenic COCs

$RBTC_{GW\text{-}nc}$ = RBTC for groundwater for non-carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-17
Risk-Based Target Concentrations - Recreational Land Use: Teenager
Building Parameters: Subdivided Space
Indoor Air and Groundwater

Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (teen)		Values Based on 10^{-6} Incremental Cancer Risk (teen)	
	RBTC for Indoor Air (a) $RBTC_{IA-nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW-nc}$ ($\mu g/L$)	RBTC for Indoor Air (a) $RBTC_{IA-nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW-nc}$ ($\mu g/L$)
Bromodichloromethane	230	9,300	1.1	45
Chlorobenzene	3,290	230,000	--	--
Chloroform	990	57,000	7.6	440
Tetrachloroethene	120	16,000	6.9	940
Trichloroethene	2,000	210,000	21	2,200

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for groundwater equals the RBTC for indoor air divided by the groundwater attenuation factor (α_{GW}) (see Table C-19).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA-nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA-c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{GW-c}$ = RBTC for groundwater for carcinogenic COCs

$RBTC_{GW-nc}$ = RBTC for groundwater for non-carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-18
Risk-Based Target Concentrations - Commercial/Industrial Land Use
Building Parameters: Subdivided Space
Indoor Air and Groundwater
Buildings 933 and 937

Presidio of San Francisco, San Francisco, California

Compound	Values Based on Non-Cancer Hazard at HQ = 1.0 (adult)		Values Based on 10^{-6} Incremental Cancer Risk (adult)	
	RBTC for Indoor Air (a) $RBTC_{IA-nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW-nc}$ ($\mu g/L$)	RBTC for Indoor Air (a) $RBTC_{IA-nc}$ ($\mu g/m^3$)	RBTC for Groundwater (b) $RBTC_{GW-nc}$ ($\mu g/L$)
Bromodichloromethane	150	6,100	0.2	6.8
Chlorobenzene	2,100	150,000	--	--
Chloroform	630	36,000	1.2	66
Tetrachloroethene	70	9,600	1.0	140
Trichloroethene	1,200	130,000	3.1	330

Notes

(a) Risk-based target concentrations ("RBTCs") for indoor air are calculated using equations presented in the text.

(b) The RBTC for groundwater equals the RBTC for indoor air divided by the groundwater attenuation factor (α_{GW}) (see Table C-19).

Abbreviations

"--" = indicates an RBTC is not calculated because the compound does not have a cancer slope factor (see Table C-2).

COC = chemical of concern

HQ = Hazard Quotient

RBTC = Risk-Based Target Concentration

$RBTC_{IA-nc}$ = RBTC for indoor air for non-carcinogenic COCs

$RBTC_{IA-c}$ = RBTC for indoor air for carcinogenic COCs

$RBTC_{GW-c}$ = RBTC for groundwater for carcinogenic COCs

$RBTC_{GW-nc}$ = RBTC for groundwater for non-carcinogenic COCs

$\mu g/L$ = micrograms per liter

$\mu g/m^3$ = micrograms per cubic meter

Table C-19
Groundwater Attenuation Factors for Chemicals of Concern
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Compound	Groundwater Attenuation Factor Building Parameters: Subdivided Space (a) α_{GW} (unitless)	Groundwater Attenuation Factor Building Parameters: Site-Specific (a) α_{GW} (unitless)
Bromodichloromethane	2.5E-05	8.9E-06
Chlorobenzene	1.4E-05	5.4E-06
Chloroform	1.7E-05	6.5E-06
Tetrachloroethene	7.3E-06	2.8E-06
Trichloroethene	9.4E-06	3.6E-06

Notes
(a) The groundwater attenuation factor (α_{GW}) was calculated using the Johnson and Ettinger vapor intrusion computer model GW-ADV.xls.

Abbreviations
α_{GW} = soil gas attenuation factor

Table C-20
Minimum Risk-Based Target Concentrations
Indoor Air and Groundwater
Buildings 933 and 937
Presidio of San Francisco, San Francisco, California

Compound	Minimum RBTC for Indoor Air (µg/m3)	Minimum RBTC for Groundwater (µg/L)	Driving Scenario
Bromodichloromethane	0.2	6.8	Worker - Cancer - Subdivided Space
Chlorobenzene	2,100	150,000	Worker - Non-Cancer - Subdivided Space
Chloroform	1.2	66	Worker - Cancer - Subdivided Space
Tetrachloroethene	1.0	140	Worker - Cancer - Subdivided Space
Trichloroethene	3.1	330	Worker - Cancer - Subdivided Space

Abbreviations
RBTC = Risk-Based Target Concentration
µg/L = micrograms per liter
µg/m3 = micrograms per cubic meter

ATTACHMENT C-1

JOHNSON & ETTINGER MODEL RUNS

DATA ENTRY SHEET

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES | X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES |

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
75274	1.00E+00	Bromodichloromethane

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of L_{WT} (cell G28)							
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-fillec porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.00E+06	4.00E-04	10	8,566	1.25E-03	5.18E-02	1.78E-04	2.04E-03	6.05E-04	0.00E+00	4.48E-05	8.98E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10	5.18E+01	0.10	8.33E+01	2.04E-03	4.00E+02	#NUM!	2.46E-05	1.28E-03	1.8E-05	7.0E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
1.08E+02	5.72E+04	1.08E+02	6.74E+06	1.08E+02

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES: X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES:

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
108907	1.00E+00	Chlorobenzene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

Totals must add up to value of L_{WT} (cell G28)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-fillec porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.00E+06	4.00E-04	10	9,702	2.79E-03	1.16E-01	1.78E-04	4.99E-03	1.46E-03	0.00E+00	2.50E-05	5.18E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10	1.16E+02	0.10	8.33E+01	4.99E-03	4.00E+02	2.34E+181	1.42E-05	1.65E-03	NA	6.0E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	3.75E+04	3.75E+04	4.72E+05	3.75E+04

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES: X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES:

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
67663	1.00E+00	Chloroform

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

Totals must add up to value of L_{WT} (cell G28)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm³)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm³/cm³)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm³)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm³/cm³)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm³)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm³/cm³)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s²)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Capillary zone effective diffusion coefficient, $D^{eff}{}_{cz}$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.00E+06	4.00E-04	10	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	3.06E-05	6.34E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10	1.23E+02	0.10	8.33E+01	7.11E-03	4.00E+02	2.06E+127	1.74E-05	2.14E-03	2.3E-05	NA

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
4.94E+01	NA	4.94E+01	7.92E+06	4.94E+01

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES: X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES:

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
127184	1.00E+00	Tetrachloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm²)
			Totals must add up to value of L_{WT} (cell G28)							
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm³)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm³/cm³)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm³)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm³/cm³)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm³)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm³/cm³)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s²)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.00E+06	4.00E-04	10	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	1.28E-05	2.66E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10	5.81E+02	0.10	8.33E+01	4.92E-03	4.00E+02	8.36E+183	7.33E-06	4.26E-03	3.0E-06	NA

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
1.90E+02	NA	1.90E+02	2.00E+05	1.90E+02

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES | X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES |

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
79016	1.00E+00	Trichloroethylene

MORE ↓

Totals must add up to value of L_{WT} (cell G28)

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-fillec porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.00E+06	4.00E-04	10	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	1.64E-05	3.40E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m^3)	Unit risk factor, URF (μg/m^3)$^{-1}$	Reference conc., RfC (mg/m^3)
10	3.35E+02	0.10	8.33E+01	5.40E-03	4.00E+02	4.17E+167	9.36E-06	3.13E-03	1.1E-04	4.0E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
7.06E+00	1.33E+04	7.06E+00	1.47E+06	7.06E+00

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES | X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES |

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
75274	1.00E+00	Bromodichloromethane

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

Totals must add up to value of L_{WT} (cell G28)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	16,460

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.03E+06	1.63E+07	1.01E-04	10	8,566	1.25E-03	5.18E-02	1.78E-04	2.04E-03	6.05E-04	0.00E+00	4.48E-05	8.98E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10	5.18E+01	0.10	8.33E+01	2.04E-03	1.65E+03	6.80E+107	8.88E-06	4.61E-04	1.8E-05	7.0E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
2.99E+02	1.59E+05	2.99E+02	6.74E+06	2.99E+02

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [X]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [ ]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
108907	1.00E+00	Chlorobenzene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

Totals must add up to value of L_{WT} (cell G28)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	16,460

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.03E+06	1.63E+07	1.01E-04	10	9,702	2.79E-03	1.16E-01	1.78E-04	4.99E-03	1.46E-03	0.00E+00	2.50E-05	5.18E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10	1.16E+02	0.10	8.33E+01	4.99E-03	1.65E+03	1.19E+44	5.37E-06	6.23E-04	NA	6.0E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	9.95E+04	9.95E+04	4.72E+05	9.95E+04

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES | X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES |

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
67663	1.00E+00	Chloroform

MORE ↓

Totals must add up to value of L_{WT} (cell G28)

ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, $\rho_b{}^A$ (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-fillec porosity, $\theta_w{}^A$ (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, $\rho_b{}^B$ (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, $\theta_w{}^B$ (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, $\rho_b{}^C$ (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, $\theta_w{}^C$ (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	16,460

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.03E+06	1.63E+07	1.01E-04	10	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	3.06E-05	6.34E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10	1.23E+02	0.10	8.33E+01	7.11E-03	1.65E+03	8.69E+30	6.48E-06	7.96E-04	2.3E-05	NA

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
1.33E+02	NA	1.33E+02	7.92E+06	1.33E+02

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES: X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES:

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
127184	1.00E+00	Tetrachloroethylene

MORE ↓

Totals must add up to value of L_{WT} (cell G28)

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	16,460

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.03E+06	1.63E+07	1.01E-04	10	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	1.28E-05	2.66E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10	5.81E+02	0.10	8.33E+01	4.92E-03	1.65E+03	4.96E+44	2.85E-06	1.66E-03	3.0E-06	NA

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
4.90E+02	NA	4.90E+02	2.00E+05	4.90E+02

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

GW-ADV
Version 3.0; 02/03

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES: X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES:

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
79016	1.00E+00	Trichloroethylene

MORE ↓

Totals must add up to value of L_{WT} (cell G28)

ENTER Average soil/ groundwater temperature, T_S (^oC)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
20	10	152.4	61	91		B	SIL	S		
	=4 inches	=5 ft	=2 ft	=3 ft						

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142.4	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	68.18	0.388	0.039	0.349	16,460

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.03E+06	1.63E+07	1.01E-04	10	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	1.64E-05	3.40E-05	142.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10	3.35E+02	0.10	8.33E+01	5.40E-03	1.65E+03	5.42E+40	3.61E-06	1.21E-03	1.1E-04	4.0E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
1.83E+01	3.45E+04	1.83E+01	1.47E+06	1.83E+01

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	1.00E+00			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,339	4.54E-03	1.89E-01	1.78E-04	5.07E-03	1.49E-03	0.00E+00	2.37E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.07E-03	4.00E+02	2.80E+178	7.69E-04	7.69E-04	NA	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.5E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71556	1.00E+00			1,1,1-Trichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24) (applies to thickness of soil stratum A, B and C)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,776	1.37E-02	5.70E-01	1.78E-04	5.33E-03	1.56E-03	0.00E+00	2.49E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.33E-03	4.00E+02	5.95E+169	7.99E-04	7.99E-04	NA	2.2E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	3.5E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95636	1.00E+00			1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	11,567	4.40E-03	1.83E-01	1.78E-04	4.14E-03	1.22E-03	0.00E+00	1.94E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.14E-03	4.00E+02	3.14E+218	6.57E-04	6.57E-04	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.1E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108678	1.00E+00			1,3,5-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	11,548	4.21E-03	1.75E-01	1.78E-04	4.11E-03	1.21E-03	0.00E+00	1.92E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.11E-03	4.00E+02	8.78E+219	6.53E-04	6.53E-04	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.1E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+00			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	8,019	4.39E-03	1.83E-01	1.78E-04	6.01E-03	1.76E-03	0.00E+00	2.81E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.01E-03	4.00E+02	2.94E+150	8.74E-04	8.74E-04	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.8E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	1.00E+00			Chloroform

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	3.32E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	7.11E-03	4.00E+02	2.06E+127	9.86E-04	9.86E-04	2.3E-05	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
9.3E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
74873	1.00E+00			Methyl chloride (chloromethane)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	4,627	7.70E-03	3.20E-01	1.78E-04	8.61E-03	2.52E-03	0.00E+00	4.02E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	8.61E-03	4.00E+02	1.26E+105	1.12E-03	1.12E-03	1.0E-06	9.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.6E-10	1.2E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75092	1.00E+00			Methylene chloride

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	6,927	1.79E-03	7.44E-02	1.78E-04	6.90E-03	2.03E-03	0.00E+00	3.23E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.90E-03	4.00E+02	1.19E+131	9.66E-04	9.66E-04	4.7E-07	3.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.9E-10	3.1E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108383	1.00E+00			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,138	5.47E-03	2.27E-01	1.78E-04	4.78E-03	1.40E-03	0.00E+00	2.24E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.78E-03	4.00E+02	1.46E+189	7.35E-04	7.35E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.0E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.00E+00			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,291	3.85E-03	1.60E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.78E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	4.00E+02	1.56E+152	8.67E-04	8.67E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.2E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.00E+00			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	2.30E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.92E-03	4.00E+02	8.36E+183	7.51E-04	7.51E-04	3.0E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
9.3E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.00E+00			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,131	5.71E-03	2.37E-01	1.78E-04	5.25E-03	1.54E-03	0.00E+00	2.46E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.25E-03	4.00E+02	1.56E+172	7.90E-04	7.90E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.1E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.00E+00			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	2.52E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.40E-03	4.00E+02	4.17E+167	8.07E-04	8.07E-04	1.1E-04	4.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.6E-08	1.9E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	1.00E+00			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	107	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	9,045	5.10E-03	2.12E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.78E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	4.00E+02	1.59E+152	8.67E-04	8.67E-04	NA	4.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.1E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	1.00E+00			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,339	4.54E-03	1.89E-01	1.78E-04	5.07E-03	1.49E-03	0.00E+00	2.19E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.07E-03	4.00E+02	2.80E+178	6.45E-04	6.45E-04	NA	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.2E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data: ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71556	1.00E+00			1,1,1-Trichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Totals must add up to value of Ls (cell F24) (applies to thickness of soil strata A, B and C)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,776	1.37E-02	5.70E-01	1.78E-04	5.33E-03	1.56E-03	0.00E+00	2.30E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.33E-03	4.00E+02	5.95E+169	6.71E-04	6.71E-04	NA	2.2E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.9E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95636	1.00E+00			1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	11,567	4.40E-03	1.83E-01	1.78E-04	4.14E-03	1.22E-03	0.00E+00	1.79E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.14E-03	4.00E+02	3.14E+218	5.46E-04	5.46E-04	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.8E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108678	1.00E+00			1,3,5-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	11,548	4.21E-03	1.75E-01	1.78E-04	4.11E-03	1.21E-03	0.00E+00	1.78E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.11E-03	4.00E+02	8.78E+219	5.43E-04	5.43E-04	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.8E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+00			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	8,019	4.39E-03	1.83E-01	1.78E-04	6.01E-03	1.76E-03	0.00E+00	2.60E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.01E-03	4.00E+02	2.94E+150	7.38E-04	7.38E-04	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.4E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	1.00E+00			Chloroform

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	3.07E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	7.11E-03	4.00E+02	2.06E+127	8.38E-04	8.38E-04	2.3E-05	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.9E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
74873	1.00E+00			Methyl chloride (chloromethane)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	4,627	7.70E-03	3.20E-01	1.78E-04	8.61E-03	2.52E-03	0.00E+00	3.72E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	8.61E-03	4.00E+02	1.26E+105	9.62E-04	9.62E-04	1.0E-06	9.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.0E-10	1.0E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75092	1.00E+00			Methylene chloride

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	6,927	1.79E-03	7.44E-02	1.78E-04	6.90E-03	2.03E-03	0.00E+00	2.99E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.90E-03	4.00E+02	1.19E+131	8.20E-04	8.20E-04	4.7E-07	3.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.6E-10	2.6E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108383	1.00E+00			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,138	5.47E-03	2.27E-01	1.78E-04	4.78E-03	1.40E-03	0.00E+00	2.07E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.78E-03	4.00E+02	1.46E+189	6.15E-04	6.15E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.4E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.00E+00			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,291	3.85E-03	1.60E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.57E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	4.00E+02	1.56E+152	7.31E-04	7.31E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.0E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.00E+00			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	2.13E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.92E-03	4.00E+02	8.36E+183	6.29E-04	6.29E-04	3.0E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.8E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.00E+00			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,131	5.71E-03	2.37E-01	1.78E-04	5.25E-03	1.54E-03	0.00E+00	2.27E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.25E-03	4.00E+02	1.56E+172	6.63E-04	6.63E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.1E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.00E+00			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	2.33E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.40E-03	4.00E+02	4.17E+167	6.77E-04	6.77E-04	1.1E-04	4.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.1E-08	1.6E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
	Soil Gas Concentration Data			
108883	1.00E+00			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, $\rho_b{}^A$ (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, $\theta_w{}^A$ (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, $\rho_b{}^B$ (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, $\theta_w{}^B$ (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, $\rho_b{}^C$ (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, $\theta_w{}^C$ (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	9,045	5.10E-03	2.12E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.57E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	4.00E+02	1.59E+152	7.31E-04	7.31E-04	NA	4.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.8E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	1.00E+00			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,339	4.54E-03	1.89E-01	1.78E-04	5.07E-03	1.49E-03	0.00E+00	2.08E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.07E-03	4.00E+02	2.80E+178	5.56E-04	5.56E-04	NA	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.1E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71556	1.00E+00			1,1,1-Trichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,776	1.37E-02	5.70E-01	1.78E-04	5.33E-03	1.56E-03	0.00E+00	2.18E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.33E-03	4.00E+02	5.95E+169	5.79E-04	5.79E-04	NA	2.2E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.5E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95636	1.00E+00			1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	11,567	4.40E-03	1.83E-01	1.78E-04	4.14E-03	1.22E-03	0.00E+00	1.70E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.14E-03	4.00E+02	3.14E+218	4.69E-04	4.69E-04	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	7.6E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108678	1.00E+00			1,3,5-Trimethylbenzene

MORE ↓

Totals must add up to value of Ls (cell F24)

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	11,548	4.21E-03	1.75E-01	1.78E-04	4.11E-03	1.21E-03	0.00E+00	1.68E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.11E-03	4.00E+02	8.78E+219	4.66E-04	4.66E-04	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	7.5E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+00			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	8,019	4.39E-03	1.83E-01	1.78E-04	6.01E-03	1.76E-03	0.00E+00	2.46E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.01E-03	4.00E+02	2.94E+150	6.40E-04	6.40E-04	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.1E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	1.00E+00			Chloroform

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	2.91E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	7.11E-03	4.00E+02	2.06E+127	7.30E-04	7.30E-04	2.3E-05	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.9E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
74873	1.00E+00			Methyl chloride (chloromethane)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	4,627	7.70E-03	3.20E-01	1.78E-04	8.61E-03	2.52E-03	0.00E+00	3.52E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	8.61E-03	4.00E+02	1.26E+105	8.44E-04	8.44E-04	1.0E-06	9.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.5E-10	9.0E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75092	1.00E+00			Methylene chloride

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	6,927	1.79E-03	7.44E-02	1.78E-04	6.90E-03	2.03E-03	0.00E+00	2.83E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.90E-03	4.00E+02	1.19E+131	7.14E-04	7.14E-04	4.7E-07	3.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.4E-10	2.3E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108383	1.00E+00			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,138	5.47E-03	2.27E-01	1.78E-04	4.78E-03	1.40E-03	0.00E+00	1.96E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.78E-03	4.00E+02	1.46E+189	5.30E-04	5.30E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	7.3E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.00E+00			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,291	3.85E-03	1.60E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.43E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	4.00E+02	1.56E+152	6.34E-04	6.34E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.7E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.00E+00			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	2.01E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.92E-03	4.00E+02	8.36E+183	5.42E-04	5.42E-04	3.0E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.7E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.00E+00			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,131	5.71E-03	2.37E-01	1.78E-04	5.25E-03	1.54E-03	0.00E+00	2.15E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.25E-03	4.00E+02	1.56E+172	5.73E-04	5.73E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	7.8E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.00E+00			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	2.21E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.40E-03	4.00E+02	4.17E+167	5.86E-04	5.86E-04	1.1E-04	4.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.6E-08	1.4E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	1.00E+00			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	9,045	5.10E-03	2.12E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.43E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	4.00E+02	1.59E+152	6.34E-04	6.34E-04	NA	4.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.5E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	1.00E+00			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,339	4.54E-03	1.89E-01	1.78E-04	5.07E-03	1.49E-03	0.00E+00	1.99E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.07E-03	4.00E+02	2.80E+178	4.88E-04	4.88E-04	NA	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.4E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)		ENTER Soil gas conc., C_g (ppmv)	Chemical
		OR		
71556	1.00E+00			1,1,1-Trichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,776	1.37E-02	5.70E-01	1.78E-04	5.33E-03	1.56E-03	0.00E+00	2.09E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.33E-03	4.00E+02	5.95E+169	5.09E-04	5.09E-04	NA	2.2E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.2E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95636	1.00E+00			1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	11,567	4.40E-03	1.83E-01	1.78E-04	4.14E-03	1.22E-03	0.00E+00	1.63E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.14E-03	4.00E+02	3.14E+218	4.10E-04	4.10E-04	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.6E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108678	1.00E+00			1,3,5-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	11,548	4.21E-03	1.75E-01	1.78E-04	4.11E-03	1.21E-03	0.00E+00	1.62E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.11E-03	4.00E+02	8.78E+219	4.07E-04	4.07E-04	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.6E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+00			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	8,019	4.39E-03	1.83E-01	1.78E-04	6.01E-03	1.76E-03	0.00E+00	2.36E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.01E-03	4.00E+02	2.94E+150	5.63E-04	5.63E-04	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.8E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	1.00E+00			Chloroform

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24) (applies to thickness of soil strata A, B, C)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	2.79E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	7.11E-03	4.00E+02	2.06E+127	6.45E-04	6.45E-04	2.3E-05	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.1E-09	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
74873	1.00E+00			Methyl chloride (chloromethane)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	4,627	7.70E-03	3.20E-01	1.78E-04	8.61E-03	2.52E-03	0.00E+00	3.38E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	8.61E-03	4.00E+02	1.26E+105	7.50E-04	7.50E-04	1.0E-06	9.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.1E-10	8.0E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75092	1.00E+00			Methylene chloride

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	6,927	1.79E-03	7.44E-02	1.78E-04	6.90E-03	2.03E-03	0.00E+00	2.71E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.90E-03	4.00E+02	1.19E+131	6.31E-04	6.31E-04	4.7E-07	3.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.2E-10	2.0E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108383	1.00E+00			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,138	5.47E-03	2.27E-01	1.78E-04	4.78E-03	1.40E-03	0.00E+00	1.88E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.78E-03	4.00E+02	1.46E+189	4.64E-04	4.64E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.4E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.00E+00			o-Xylene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,291	3.85E-03	1.60E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.33E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	4.00E+02	1.56E+152	5.58E-04	5.58E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	7.6E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.00E+00			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	1.93E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.92E-03	4.00E+02	8.36E+183	4.75E-04	4.75E-04	3.0E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
5.9E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.00E+00			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	10,131	5.71E-03	2.37E-01	1.78E-04	5.25E-03	1.54E-03	0.00E+00	2.06E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.25E-03	4.00E+02	1.56E+172	5.03E-04	5.03E-04	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.9E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.00E+00			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25		5
				=12 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	2.12E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.40E-03	4.00E+02	4.17E+167	5.14E-04	5.14E-04	1.1E-04	4.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.3E-08	1.2E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data: ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	1.00E+00			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5
				=12 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	4,000	1.00E+00	2.54E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.04E+06	3.84E-04	10.16	9,045	5.10E-03	2.12E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.33E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	4.00E+02	1.59E+152	5.57E-04	5.57E-04	NA	4.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.3E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	1.00E+00			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,339	4.54E-03	1.89E-01	1.78E-04	5.07E-03	1.49E-03	0.00E+00	2.37E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.07E-03	1.65E+03	2.32E+43	6.69E-05	6.69E-05	NA	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.3E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71556	1.00E+00			1,1,1-Trichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,776	1.37E-02	5.70E-01	1.78E-04	5.33E-03	1.56E-03	0.00E+00	2.49E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.33E-03	1.65E+03	1.81E+41	6.75E-05	6.75E-05	NA	2.2E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.9E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)		OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95636	1.00E+00				1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	11,567	4.40E-03	1.83E-01	1.78E-04	4.14E-03	1.22E-03	0.00E+00	1.94E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.14E-03	1.65E+03	1.25E+53	6.44E-05	6.44E-05	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.0E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108678	1.00E+00			1,3,5-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	11,548	4.21E-03	1.75E-01	1.78E-04	4.11E-03	1.21E-03	0.00E+00	1.92E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.11E-03	1.65E+03	2.81E+53	6.44E-05	6.44E-05	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.0E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+00			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	8,019	4.39E-03	1.83E-01	1.78E-04	6.01E-03	1.76E-03	0.00E+00	2.81E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.01E-03	1.65E+03	3.68E+36	6.87E-05	6.87E-05	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.2E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	1.00E+00			Chloroform

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	3.32E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	7.11E-03	1.65E+03	8.69E+30	7.04E-05	7.04E-05	2.3E-05	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.6E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)		ENTER Soil gas conc., C_g (ppmv)	Chemical
74873	1.00E+00	OR		Methyl chloride (chloromethane)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)		ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	106.68	20	61	46	0	S	OR	
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	4,627	7.70E-03	3.20E-01	1.78E-04	8.61E-03	2.52E-03	0.00E+00	4.02E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	8.61E-03	1.65E+03	3.47E+25	7.19E-05	7.19E-05	1.0E-06	9.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.0E-11	7.7E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75092	1.00E+00			Methylene chloride

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	6,927	1.79E-03	7.44E-02	1.78E-04	6.90E-03	2.03E-03	0.00E+00	3.23E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.90E-03	1.65E+03	7.12E+31	7.01E-05	7.01E-05	4.7E-07	3.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.4E-11	2.2E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108383	1.00E+00			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,138	5.47E-03	2.27E-01	1.78E-04	4.78E-03	1.40E-03	0.00E+00	2.24E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.78E-03	1.65E+03	9.33E+45	6.62E-05	6.62E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.1E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.00E+00			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,291	3.85E-03	1.60E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.78E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	1.65E+03	9.67E+36	6.86E-05	6.86E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.4E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.00E+00			Tetrachloroethylene

Soil Gas Concentration Data

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	2.30E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.92E-03	1.65E+03	4.96E+44	6.66E-05	6.66E-05	3.0E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
8.2E-11	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.00E+00			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,131	5.71E-03	2.37E-01	1.78E-04	5.25E-03	1.54E-03	0.00E+00	2.46E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.25E-03	1.65E+03	7.00E+41	6.73E-05	6.73E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.2E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.00E+00			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	2.52E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.40E-03	1.65E+03	5.42E+40	6.76E-05	6.76E-05	1.1E-04	4.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.1E-09	1.6E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	1.00E+00			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	106.68	20	61	46	0	S		
=4 inches	=3.5 ft	Typical Summer GW Temp	=2 ft	=1.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	96.52	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	9,045	5.10E-03	2.12E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.78E-03	96.52

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	1.65E+03	9.71E+36	6.86E-05	6.86E-05	NA	4.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.6E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	1.00E+00			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Totals must add up to value of Ls (cell F24) (applies to the three thickness columns)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,339	4.54E-03	1.89E-01	1.78E-04	5.07E-03	1.49E-03	0.00E+00	2.19E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.07E-03	1.65E+03	2.32E+43	6.42E-05	6.42E-05	NA	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.2E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71556	1.00E+00			1,1,1-Trichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,776	1.37E-02	5.70E-01	1.78E-04	5.33E-03	1.56E-03	0.00E+00	2.30E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.33E-03	1.65E+03	1.81E+41	6.48E-05	6.48E-05	NA	2.2E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.8E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95636	1.00E+00			1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	11,567	4.40E-03	1.83E-01	1.78E-04	4.14E-03	1.22E-03	0.00E+00	1.79E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.14E-03	1.65E+03	1.25E+53	6.13E-05	6.13E-05	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.9E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108678	1.00E+00			1,3,5-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	11,548	4.21E-03	1.75E-01	1.78E-04	4.11E-03	1.21E-03	0.00E+00	1.78E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.11E-03	1.65E+03	2.81E+53	6.12E-05	6.12E-05	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.9E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+00			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	8,019	4.39E-03	1.83E-01	1.78E-04	6.01E-03	1.76E-03	0.00E+00	2.60E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.01E-03	1.65E+03	3.68E+36	6.63E-05	6.63E-05	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.1E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	1.00E+00			Chloroform

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	3.07E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	7.11E-03	1.65E+03	8.69E+30	6.81E-05	6.81E-05	2.3E-05	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.4E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
74873	1.00E+00			Methyl chloride (chloromethane)

(Soil Gas Concentration Data spans the two soil gas concentration columns.)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	4,627	7.70E-03	3.20E-01	1.78E-04	8.61E-03	2.52E-03	0.00E+00	3.72E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	8.61E-03	1.65E+03	3.47E+25	7.00E-05	7.00E-05	1.0E-06	9.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.9E-11	7.5E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75092	1.00E+00			Methylene chloride

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	6,927	1.79E-03	7.44E-02	1.78E-04	6.90E-03	2.03E-03	0.00E+00	2.99E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.90E-03	1.65E+03	7.12E+31	6.78E-05	6.78E-05	4.7E-07	3.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.3E-11	2.2E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data: ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108383	1.00E+00			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Thickness columns: Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,138	5.47E-03	2.27E-01	1.78E-04	4.78E-03	1.40E-03	0.00E+00	2.07E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.78E-03	1.65E+03	9.33E+45	6.34E-05	6.34E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.7E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.00E+00			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,291	3.85E-03	1.60E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.57E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	1.65E+03	9.67E+36	6.61E-05	6.61E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.1E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.00E+00			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	2.13E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.92E-03	1.65E+03	4.96E+44	6.37E-05	6.37E-05	3.0E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.9E-11	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.00E+00			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,131	5.71E-03	2.37E-01	1.78E-04	5.25E-03	1.54E-03	0.00E+00	2.27E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.25E-03	1.65E+03	7.00E+41	6.46E-05	6.46E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.9E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.00E+00			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	2.33E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.40E-03	1.65E+03	5.42E+40	6.50E-05	6.50E-05	1.1E-04	4.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.9E-09	1.6E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	1.00E+00			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	122	20	61	61	0	S		
=4 inches	=4 ft	Typical Summer GW Temp	=2 ft	=2 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	111.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	9,045	5.10E-03	2.12E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.57E-03	111.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	1.65E+03	9.71E+36	6.61E-05	6.61E-05	NA	4.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.6E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	1.00E+00			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,339	4.54E-03	1.89E-01	1.78E-04	5.07E-03	1.49E-03	0.00E+00	2.08E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.07E-03	1.65E+03	2.32E+43	6.17E-05	6.17E-05	NA	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.2E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71556	1.00E+00			1,1,1-Trichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,776	1.37E-02	5.70E-01	1.78E-04	5.33E-03	1.56E-03	0.00E+00	2.18E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.33E-03	1.65E+03	1.81E+41	6.24E-05	6.24E-05	NA	2.2E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.7E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95636	1.00E+00			1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	11,567	4.40E-03	1.83E-01	1.78E-04	4.14E-03	1.22E-03	0.00E+00	1.70E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.14E-03	1.65E+03	1.25E+53	5.86E-05	5.86E-05	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.4E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)		ENTER Soil gas conc., C_g (ppmv)	Chemical
108678	1.00E+00	OR		1,3,5-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)		ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S	OR	
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	11,548	4.21E-03	1.75E-01	1.78E-04	4.11E-03	1.21E-03	0.00E+00	1.68E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.11E-03	1.65E+03	2.81E+53	5.85E-05	5.85E-05	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.4E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+00			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	8,019	4.39E-03	1.83E-01	1.78E-04	6.01E-03	1.76E-03	0.00E+00	2.46E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.01E-03	1.65E+03	3.68E+36	6.40E-05	6.40E-05	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.1E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	1.00E+00			Chloroform

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	2.91E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	7.11E-03	1.65E+03	8.69E+30	6.61E-05	6.61E-05	2.3E-05	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.2E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
74873	1.00E+00			Methyl chloride (chloromethane)

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	4,627	7.70E-03	3.20E-01	1.78E-04	8.61E-03	2.52E-03	0.00E+00	3.52E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	8.61E-03	1.65E+03	3.47E+25	6.83E-05	6.83E-05	1.0E-06	9.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.8E-11	7.3E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75092	1.00E+00			Methylene chloride

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

(Thickness columns: Totals must add up to value of Ls (cell F24))

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	6,927	1.79E-03	7.44E-02	1.78E-04	6.90E-03	2.03E-03	0.00E+00	2.83E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.90E-03	1.65E+03	7.12E+31	6.58E-05	6.58E-05	4.7E-07	3.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.3E-11	2.1E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108383	1.00E+00			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,138	5.47E-03	2.27E-01	1.78E-04	4.78E-03	1.40E-03	0.00E+00	1.96E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.78E-03	1.65E+03	9.33E+45	6.08E-05	6.08E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.3E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.00E+00			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,291	3.85E-03	1.60E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.43E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	1.65E+03	9.67E+36	6.39E-05	6.39E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.7E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.00E+00			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	2.01E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.92E-03	1.65E+03	4.96E+44	6.12E-05	6.12E-05	3.0E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.5E-11	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.00E+00			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,131	5.71E-03	2.37E-01	1.78E-04	5.25E-03	1.54E-03	0.00E+00	2.15E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.25E-03	1.65E+03	7.00E+41	6.22E-05	6.22E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.5E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.00E+00			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. (μg/m^3)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	2.21E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m^3)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m^3)	Unit risk factor, URF (μg/m^3)$^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.40E-03	1.65E+03	5.42E+40	6.25E-05	6.25E-05	1.1E-04	4.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.8E-09	1.5E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	1.00E+00			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	137	20	61	76	0	S		
=4 inches	=4.5 ft	Typical Summer GW Temp	=2 ft	=2.5 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	126.84	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	9,045	5.10E-03	2.12E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.43E-03	126.84

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	1.65E+03	9.71E+36	6.39E-05	6.39E-05	NA	4.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.5E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75343	1.00E+00			1,1-Dichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,339	4.54E-03	1.89E-01	1.78E-04	5.07E-03	1.49E-03	0.00E+00	1.99E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.07E-03	1.65E+03	2.32E+43	5.93E-05	5.93E-05	NA	5.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.1E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71556	1.00E+00			1,1,1-Trichloroethane

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,776	1.37E-02	5.70E-01	1.78E-04	5.33E-03	1.56E-03	0.00E+00	2.09E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.33E-03	1.65E+03	1.81E+41	6.01E-05	6.01E-05	NA	2.2E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.6E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95636	1.00E+00			1,2,4-Trimethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	11,567	4.40E-03	1.83E-01	1.78E-04	4.14E-03	1.22E-03	0.00E+00	1.63E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.14E-03	1.65E+03	1.25E+53	5.60E-05	5.60E-05	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.0E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108678	1.00E+00			1,3,5-Trimethylbenzene

Soil Gas Concentration Data

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	11,548	4.21E-03	1.75E-01	1.78E-04	4.11E-03	1.21E-03	0.00E+00	1.62E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.11E-03	1.65E+03	2.81E+53	5.59E-05	5.59E-05	NA	6.0E-03

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	9.0E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+00			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	8,019	4.39E-03	1.83E-01	1.78E-04	6.01E-03	1.76E-03	0.00E+00	2.36E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.01E-03	1.65E+03	3.68E+36	6.19E-05	6.19E-05	7.8E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.0E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data: ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	1.00E+00			Chloroform

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	7,450	2.95E-03	1.23E-01	1.78E-04	7.11E-03	2.09E-03	0.00E+00	2.79E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	7.11E-03	1.65E+03	8.69E+30	6.42E-05	6.42E-05	2.3E-05	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.1E-10	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
74873	1.00E+00			Methyl chloride (chloromethane)

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	4,627	7.70E-03	3.20E-01	1.78E-04	8.61E-03	2.52E-03	0.00E+00	3.38E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	8.61E-03	1.65E+03	3.47E+25	6.65E-05	6.65E-05	1.0E-06	9.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.7E-11	7.1E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
75092	1.00E+00			Methylene chloride

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, $D^{eff}{}_A$ (cm^2/s)	Stratum B effective diffusion coefficient, $D^{eff}{}_B$ (cm^2/s)	Stratum C effective diffusion coefficient, $D^{eff}{}_C$ (cm^2/s)	Total overall effective diffusion coefficient, $D^{eff}{}_T$ (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	6,927	1.79E-03	7.44E-02	1.78E-04	6.90E-03	2.03E-03	0.00E+00	2.71E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	6.90E-03	1.65E+03	7.12E+31	6.38E-05	6.38E-05	4.7E-07	3.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.2E-11	2.0E-08

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	Soil Gas Concentration Data: ENTER Soil gas conc., C_g ($\mu g/m^3$)		Soil Gas Concentration Data: ENTER Soil gas conc., C_g (ppmv)	Chemical
		OR		
108383	1.00E+00			m-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)		ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)				OR	
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,138	5.47E-03	2.27E-01	1.78E-04	4.78E-03	1.40E-03	0.00E+00	1.88E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.78E-03	1.65E+03	9.33E+45	5.84E-05	5.84E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.0E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.00E+00			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,291	3.85E-03	1.60E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.33E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	1.65E+03	9.67E+36	6.17E-05	6.17E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.5E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.00E+00			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	9,451	1.40E-02	5.81E-01	1.78E-04	4.92E-03	1.44E-03	0.00E+00	1.93E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	4.92E-03	1.65E+03	4.96E+44	5.88E-05	5.88E-05	3.0E-06	NA

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.2E-11	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	1.00E+00			p-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25		5
		=160 ft	=110 ft	=30 ft				

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	10,131	5.71E-03	2.37E-01	1.78E-04	5.25E-03	1.54E-03	0.00E+00	2.06E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.25E-03	1.65E+03	7.00E+41	5.98E-05	5.98E-05	NA	7.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	8.2E-09

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.00E+00			Trichloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

Totals must add up to value of Ls (cell F24)

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	8,433	8.06E-03	3.35E-01	1.78E-04	5.40E-03	1.58E-03	0.00E+00	2.12E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.40E-03	1.65E+03	5.42E+40	6.03E-05	6.03E-05	1.1E-04	4.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.7E-09	1.4E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 2.0; 02/03

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g (μg/m^3)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	1.00E+00			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^{o}C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
10	152.4	20	61	91	0	S		
=4 inches	=5 ft	Typical Summer GW Temp	=2 ft	=3 ft				

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.51	0.454	0.176	SIL	1.68	0.388	0.213				
	site specific	site specific	site specific		site specific	site specific	site specific				

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4880	3350	910	0.1	0.25	5
		=160 ft	=110 ft	=30 ft			

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
9.46E+08	142.24	0.278	0.175	ERROR	0.307	1.01E-07	0.636	6.42E-08	16,460	1.00E+00	1.03E+06

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
1.65E+07	9.97E-05	10.16	9,045	5.10E-03	2.12E-01	1.78E-04	5.94E-03	1.74E-03	0.00E+00	2.33E-03	142.24

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
10.16	1.00E+00	0.10	8.33E+01	5.94E-03	1.65E+03	9.71E+36	6.17E-05	6.17E-05	NA	4.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.5E-07

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

APPENDIX D

BOREHOLE LOGS

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	West of Building 933					BOREHOLE / WELL NAME	933SB101
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	**Presidio - Building 933**
DRILLING METHOD	Direct-Push					PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet)	TO		DATE STARTED 6/20/06	DATE COMPLETED 6/20/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet)	TO		BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 8
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet)	TO		DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement		FROM (feet) 0.0	TO 8.0		TOP OF CASING	GROUND SURFACE 11.15
SEAL	NA		FROM (feet)	TO		LOGGED BY	Zita Maliga
FILTER PACK	NA		FROM (feet)	TO		CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil samples collected in butyrate liners.						

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
							SILTY SAND; 10% gravel; 45% sand; 40% silt; 5% clay; moist	SM		
			0							
			0.3		0.0	1				
			0.5		0.0					
			0.5		0.0	2				
			0.5		0.2		SILT; 10% very fine to fine sand; 80% silt; 10% clay; moist to wet; gravel at base	ML		
			0.5		0.3	3				
			0.5		0.2		SILTY SAND; 65% sand; 35% silt; wet	SM		
			0.5		0.3	4				
			0							
			0			5				
			0							
			0.25		0.0	6	ELASTIC SILT; 10% sand; 60% silt; 30% clay; wet; 1-inch thick gravel seam at 7 feet bgs	MH		
			0.5		0.0					
			0.5		0.0	7				
			0.5		0.0					
						8	Total Depth of Borehole = 8 feet.			
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/13/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	East of Building 933					BOREHOLE / WELL NAME	933SB102		
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	Presidio - Building 933		
DRILLING METHOD	Direct-Push					PROJECT NUMBER	A00003.08		
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet)	TO		DATE STARTED	6/20/06	DATE COMPLETED	6/20/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet)	TO		BOREHOLE DIAM (inches)	2.0	TOTAL DEPTH (feet)	8
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet)	TO		DATUM	mean sea level NAVD 1988		
GROUT	Type II/V portland cement		FROM (feet) 0.0	TO	8.0	TOP OF CASING		GROUND SURFACE	11.08
SEAL	NA		FROM (feet)	TO		LOGGED BY	Zita Maliga		
FILTER PACK	NA		FROM (feet)	TO		CHECKED BY	Bruce Castle, PG #6082		
REMARKS	Soil samples collected in butyrate liners.								

SAMPLES										
TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
							SAND; 100% fine sand; poorly graded; moist	SP		
			0		0.0					
			0.25			1				
			0.5		1.5					
			0.5		0.0	2				
			0.5		0.0		SILTY SAND; 60% fine sand; 40% silt; moist	SM		
			0.5		0.0	3	SAND; 100% fine sand; moist to wet	SP		
			0.5		0.0					
			0		0.0	4				
			0.5		0.0					
			0.5		0.1	5				
			0.5		0.2		SILT; 100% silt; wet; medium soft	ML		
							SANDY SILT; 30% sand; 40% silt; 30% clay; wet	ML		
			0.5		0.1	6				
			0.5		0.0		SILT; 90% silt; 10% clay; wet	ML		
			0.5		0.1	7	SAND; 90% sand; 10% silt; wet; 1-inch thick distinctive brick red sand at 7 feet	SP		
			0.5		0.2		ELASTIC SILT; 10% sand; 60% silt; 30% clay; wet; organic odor from 7 to 8 feet	MH		
						8	Total Depth of Borehole = 8 feet.			
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/13/06

Erler & Kalinowski, Inc.

Borehole & Well Construction Log

BOREHOLE LOCATION	West of Building 933					BOREHOLE / WELL NAME	933SB103
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	**Presidio - Building 933**
DRILLING METHOD	Direct-Push					PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATE STARTED 6/21/06	DATE COMPLETED 6/21/06
BLANK CASING	NA	DIAMETER (inches)		FROM (feet)	TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 6
PERFORATED CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement			FROM (feet) 0.0	TO 6.0	TOP OF CASING	GROUND SURFACE 10.90
SEAL	NA			FROM (feet)	TO	LOGGED BY	Zita Maliga
FILTER PACK	NA			FROM (feet)	TO	CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil samples collected in butyrate liners.						

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
						0	SILTY SAND; 85% fine sand; 15% silt; dry to moist; trace gravel	SM		
			0.25		0.0					
			0.5		0.0	1				
			0.5		0.0					
15:15	937SB103[1.5]									
			0.5		0.0	2				
03:10	937SB103[2]									
			0.5		0.0					
03:05	937SB103[2.5]									
			0.5		0.0	3	SAND; 100% fine sand; poorly graded; moist to wet	SP		
			0.5		0.0		SILT WITH SAND; 25% sand; 70% silt; 5% clay; moist	ML		
			0.5			4				
			0.5		0.0					
			0.5		0.0	5				
			0.5		0.0		SILT; 100% silt; wet; possibly serpentinite	ML		
							ELASTIC SILT; 100% silt; wet	MH		
			0.5		0.0	6	Total Depth of Borehole = 6 feet.			
			0.5		0.0					
			0.5		0.0	7				
			0.5		0.0					
			0.5		0.0	8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/13/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	In lawn, north of Building 937	BOREHOLE / WELL NAME	**937SB110**
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387	PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push	PROJECT NUMBER	**A00003.08**

CONDUCTOR CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATE STARTED	6/21/06	DATE COMPLETED	6/21/06
BLANK CASING	NA	DIAMETER (inches)		FROM (feet)	TO	BOREHOLE DIAM (inches)	2.0	TOTAL DEPTH (feet)	6
PERFORATED CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATUM	mean sea level NAVD 1988		
GROUT	Type II/V portland cement			FROM (feet) 0.0	TO 6.0	TOP OF CASING		GROUND SURFACE	12.42
SEAL	NA			FROM (feet)	TO	LOGGED BY	Zita Maliga		
FILTER PACK	NA			FROM (feet)	TO	CHECKED BY	Bruce Castle, PG #6082		

REMARKS: Soil sample collected with hand auger.

SAMPLES

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0.5		0.0		SAND; 100% sand; poorly graded; dry; trace gravel, hand auger to 3 feet	SP		
			0.5		0.0	1				
			0.5		0.0					
			0.5		0.0	2				
01:15 13:15	937SB110[2]		0.5		0.0		SILTY SAND; 50% fine sand; 30% silt; 20% clay; low plasticity; moist; increasing moisture with depth	SM		
			0.5		0.0	3				
			0.5		0.0					
			0.5		0.0	4	SILT WITH SAND; 20% fine sand; 70% silt; 10% clay; moist; increasing moisture with depth	ML		
			0.5		0.0					
			0.5		0.0	5				
			0.5		0.0		SAND; 100% fine sand; poorly graded; wet	SP		
						6	SANDY SILT; 10% gravel; 30% sand; 50% silt; 10% clay; moist to wet; weathered serpentinite present; gleyed at 5.75 feet	ML		
							Total Depth of Borehole = 6 feet.			
						7				
						8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937					BOREHOLE / WELL NAME	**937SB111**
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push					PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATE STARTED 6/20/06	DATE COMPLETED 6/20/06
BLANK CASING	NA	DIAMETER (inches)		FROM (feet)	TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 8
PERFORATED CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement			FROM (feet) 0.0	TO 8.0	TOP OF CASING	GROUND SURFACE 11.22
SEAL	NA			FROM (feet)	TO	LOGGED BY	Zita Maliga
FILTER PACK	NA			FROM (feet)	TO	CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil samples collected in butyrate liners.						

SAMPLES: TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
						0	SAND; 100% sand; poorly graded; moist	SP		
			0.5		0.0					
			0.5		0.0	1				
			0.5		0.4					
			0.5		1.6	2				
			0.5		1.9		SILT; 5% very fine sand; 95% silt; moist; gleyed at 3.5 feet	ML		
12:17	937SB111[2]									
			0.5		1.9	3				
			0.5		1.6		SANDY SILT; 10% gravel; 30% very fine to medium sand; 65% silt; moist	ML		
			0.5		1.3	4				
			0.5		1.4					
			0.5		1.4	5	SANDY SILT; 5% gravel; 25% sand; 65% silt; moist; black shiny fragments, possibly coal	ML		
			0.5		1.4					
			0.5		2.1	6				
			0.5		2.5					
			0.5		1.1	7				
			0.5		2.6		ELASTIC SILT; 10% gravel; 10% sand; 40% silt; 40% clay; moist to wet; grades to soft, and moist to wet; organic odor at 8 feet	MH		
						8	Total Depth of Borehole = 8 feet.			
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937			BOREHOLE / WELL NAME	**937SB112**		
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387			PROJECT NAME	**Presidio - Building 937**		
DRILLING METHOD	Direct-Push			PROJECT NUMBER	**A00003.08**		
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATE STARTED	6/21/06	DATE COMPLETED	6/21/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet) TO	BOREHOLE DIAM (inches)	2.0	TOTAL DEPTH (feet)	6
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATUM	mean sea level NAVD 1988		
GROUT	Type II/V portland cement		FROM (feet) 0.0 TO 6.0	TOP OF CASING		GROUND SURFACE	11.17
SEAL	NA		FROM (feet) TO	LOGGED BY	Zita Maliga		
FILTER PACK	NA		FROM (feet) TO	CHECKED BY	Bruce Castle, PG #6082		
REMARKS	Soil samples collected in butyrate liners.						

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
							SAND; 100% fine sand; poorly graded; moist	SP		
			0		-					
			0.5		-	1				
10:15	937SB112[1]									
			0.5		-					
10:20	937SB112[1.5]									
			0.5		-	2				
10:25	937SB112[2]									
10:25	937SB112[2] DUP		0.5		-		SANDY SILT; 30% fine sand; 70% silt; low plasticity; moist to wet; grades to soft at 4.5 feet; weathered serpentinite	ML		
			0.5		-	3				
			0.4		-					
			0.5		-	4				
			0.5		-			∇		
			0.5		-	5	SILTY SAND; 10% gravel; 60% sand; 30% silt; wet	SM		
			0.5		-		SILT; 80% silt; 20% clay; medium plasticity; wet	ML		
							SAND; 100% fine sand; poorly graded; wet	SP		
						6	Total Depth of Borehole = 6 feet.			
						7				
						8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937				BOREHOLE / WELL NAME	**937SB113**		
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387				PROJECT NAME	**Presidio - Building 937**		
DRILLING METHOD	Direct-Push				PROJECT NUMBER	**A00003.08**		
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet)	TO	DATE STARTED	6/20/06	DATE COMPLETED	6/20/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet)	TO	BOREHOLE DIAM (inches)	2.0	TOTAL DEPTH (feet)	8
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet)	TO	DATUM	mean sea level NAVD 1988		
GROUT	Type II/V portland cement		FROM (feet) 0.0	TO 8.0	TOP OF CASING		GROUND SURFACE	11.04
SEAL	NA		FROM (feet)	TO	LOGGED BY	Zita Maliga		
FILTER PACK	NA		FROM (feet)	TO	CHECKED BY	Bruce Castle, PG #6082		
REMARKS	Soil samples collected in butyrate liners.							

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
							SAND; 100% sand; poorly graded; moist	SP		
			0		0.0					
			0.4		0.0	1				
			0.5		0.0		SILT WITH SAND; 20% very fine sand; 80% silt; moist; gleyed at 3.75 feet	ML		
03:05	937SB113[1.5]									
02:20	937SB113[2]		0.5		0.0	2				
02:55	937SB113[2.5]		0.5		0.0					
			0.5		0.0	3				
			0.3		0.0					
			0		0.0	4	SILTY SAND; 60% very fine to fine sand; 30% silt; 10% clay; wet	SM		
			0.2		0.0					
			0.5		0.0	5				
			0.5		0.0					
			0.5		0.0	6				
			0.5		0.5					
			0.5		0.3	7	ELASTIC SILT; 10% very fine to fine sand; 65% silt; 25% clay; wet; weak organic odor	MH		
			0.5		0.5					
						8	Total Depth of Borehole = 8 feet.			
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Erler & Kalinowski, Inc.

Borehole & Well Construction Log

BOREHOLE LOCATION	Inside Building 937					BOREHOLE / WELL NAME	**937SB114**
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push					PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATE STARTED 6/20/06	DATE COMPLETED 6/20/06
BLANK CASING	NA	DIAMETER (inches)		FROM (feet)	TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 8
PERFORATED CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement			FROM (feet) 0.0	TO	TOP OF CASING	GROUND SURFACE 10.84
SEAL	NA			FROM (feet)	TO	LOGGED BY	Zita Maliga
FILTER PACK	NA			FROM (feet)	TO	CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil samples collected in butyrate liners.						

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
						0	SAND; 100% sand; nonplastic; moist	SP		
			0.5		1.6					
			0.5		1.0	1				
17:00	937SB114[1.5]		0.5		3.4	1.5	SANDY SILT; 10% gravel, 30% sand, 55% silt, 5% clay; nonplastic; moist	ML		
			0.5		1.6	2	SILT; 10% sand, 90% silt; nonplastic; moist	ML		
			0.5		1.4					
			0.5		3.2	3				
			0.5		2.7					
			0.3		3.3	4	SANDY SILT; 30% sand, 50% silt, 10% clay; low plasticity; wet	ML		
			0.5		-					
			0.5		-	5				
			0.5		-					
			0.5		-	6				
			0.5		-					
			0.5		-	7				
			0.5		-					
						8	Total Depth of Borehole = 8 feet.			
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937			BOREHOLE / WELL NAME	**937SB115**		
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387			PROJECT NAME	**Presidio - Building 937**		
DRILLING METHOD	Direct-Push			PROJECT NUMBER	**A00003.08**		
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATE STARTED	6/20/06	DATE COMPLETED	6/20/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet) TO	BOREHOLE DIAM (inches)	2.0	TOTAL DEPTH (feet)	8
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATUM	mean sea level NAVD 1988		
GROUT	Type II/V portland cement		FROM (feet) 0.0 TO 8.0	TOP OF CASING		GROUND SURFACE	11.18
SEAL	NA		FROM (feet) TO	LOGGED BY	Zita Maliga		
FILTER PACK	NA		FROM (feet) TO	CHECKED BY	Bruce Castle, PG #6082		
REMARKS	Soil samples collected in butyrate liners.						

SAMPLES										
TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
							SAND; 100% sand; moist	SP		
			0		-					
			0		-	1				
			0.4		0.0					
			0.5		0.0	2				
17:08	937SB115[2]		0.5		0.0		SANDY SILT; 30% very to fine sand; 60% silt; 10% clay; moist to wet; weak mottling; gleyed sand seam (<2 inches) at 6 feet	ML		
			0.5		0.1	3				
			0.5		0.0					
			0		0.0	4				
			0		-					
			0.3		-	5				
			0.5		0.3					
			0.5		3.4	6				
			0.5		1.2		ELASTIC SILT; 65% silt; 35% clay; high plasticity; wet	MH		
			0.5		1.5	7				
			0.5		1.5					
						8	Total Depth of Borehole = 8 feet.			
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	In lawn between Building 937 and 933		BOREHOLE / WELL NAME	**937SB117**
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387		PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push		PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches) / FROM (feet) / TO	DATE STARTED 6/21/06	DATE COMPLETED 6/21/06
BLANK CASING	NA	DIAMETER (inches) / FROM (feet) / TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 6
PERFORATED CASING	NA	DIAMETER (inches) / FROM (feet) / TO	DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement	FROM (feet) 0.0 TO 6.0	TOP OF CASING	GROUND SURFACE 11.58
SEAL	NA	FROM (feet) / TO	LOGGED BY	Zita Maliga
FILTER PACK	NA	FROM (feet) / TO	CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil sample collected with hand auger.			

SAMPLES

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0.5		-		SAND; 100% sand; poorly graded; moist; trace gravel	SP		
			0.5		-					
			0.5		-	1				
			0.5		-		SILTY SAND; 10% gravel; 60% sand; 30% silt; moist	SM		
			0.5		-	2				
			0.5		-					
			0.5		-	3				
			0.5		-					
			0.5		-	4				
			0.5		-			∇		
			0.5		-	5				
			0.5		-					
						6	Total Depth of Borehole = 6 feet.			
						7				
						8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Erler & Kalinowski, Inc.

Borehole & Well Construction Log

BOREHOLE LOCATION	Between Building 937 and 933			BOREHOLE / WELL NAME	**937SB118**
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387			PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push			PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATE STARTED 6/21/06	DATE COMPLETED 6/21/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet) TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 4
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement		FROM (feet) 0.0 TO 4.0	TOP OF CASING	GROUND SURFACE 10.82
SEAL	NA		FROM (feet) TO	LOGGED BY	Zita Maliga
FILTER PACK	NA		FROM (feet) TO	CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil sample collected with hand auger.				

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0.5		-		SILTY SAND WITH GRAVEL; 25% gravel; 60% very fine to fine sand; 15% silt; dry	SM		
			0.5		-					
			0.5		-	1				
			0.5		-		SILTY SAND; 60% sand; 30% silt; 10% clay; moist; grades to wet	SM		
			0.5		-	2				
			0.5		-					
			0.5		-	3				
			0.5		-			∇		
						4	Total Depth of Borehole = 4 feet.			
						5				
						6				
						7				
						8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937					BOREHOLE / WELL NAME	**937SB119**
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push					PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATE STARTED 6/20/06	DATE COMPLETED 6/20/06
BLANK CASING	NA	DIAMETER (inches)		FROM (feet)	TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 8
PERFORATED CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement			FROM (feet) 0.0	TO 8.0	TOP OF CASING	GROUND SURFACE 11.37
SEAL	NA			FROM (feet)	TO	LOGGED BY	Zita Maliga
FILTER PACK	NA			FROM (feet)	TO	CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil samples collected in butyrate liners.						

SAMPLES

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)
			0			
			0.4		0.0	1
			0.5		0.0	
			0.5		1.5	2
13:25	937SB119[2]		0.5		1.1	
			0.5		1.0	3
			0.5		0.9	
			0.2		0.6	4
			0.5		0.0	
			0.5		0.0	5
			0.5		0.4	
			0.5		0.0	6
			0.5		0.0	
			0.5		0.0	7
			0.5		0.0	
						8
						9

MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE
SAND; 100% sand; poorly graded; moist	SP
SANDY SILT; 5% gravel; 25% very fine to medium sand; 70% silt; moist	ML
SANDY SILT; 5% gravel; 30% fine to coarse sand; 60% silt; 5% clay; moist; gleyed angular gravel at 4.5 feet	ML
SILTY SAND; 10% gravel; 50% sand; 40% silt; moist	SM
SANDY SILT WITH GRAVEL; 15% gravel; 35%sand; 50% silt; moist	ML
SANDY SILT WITH GRAVEL; 20% gravel; 30% sand; 50% silt; moist	ML
SANDY SILT; 20% gravel; 30% sand; 50% silt; moist; weathered serpentinite?	ML
SANDY SILT; 20% gravel; 30% sand; 50% silt; moist; gravel interbedded, weathered serpentinite?	ML
Total Depth of Borehole = 8 feet.	

WELL CONSTRUCTION

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937			BOREHOLE / WELL NAME	**937SB124**
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387			PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push			PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATE STARTED 6/20/06	DATE COMPLETED 6/20/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet) TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 4
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement		FROM (feet) 0.0 TO 4.0	TOP OF CASING	GROUND SURFACE 11.13
SEAL	NA		FROM (feet) TO	LOGGED BY	Zita Maliga
FILTER PACK	NA		FROM (feet) TO	CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil samples collected in butyrate liners.				

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0		-		SAND; 100% sand; poorly graded; moist	SP		
			0		-	1				
			0.5		-					
			0.5		-	2				
			0.5		-		SILTY SAND; 60% sand; 40% silt; moist; weak mottling	SM		
			0.5		-	3				
			0.5		-		SILT; moist; weak mottling	ML		
10:20	937SB124[3.5]		0.5		-	4				
							Total Depth of Borehole = 4 feet.			
						5				
						6				
						7				
						8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937					BOREHOLE / WELL NAME	**937SB125**		
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	**Presidio - Building 937**		
DRILLING METHOD	Direct-Push					PROJECT NUMBER	**A00003.08**		
CONDUCTOR CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATE STARTED	6/20/06	DATE COMPLETED	6/20/06
BLANK CASING	NA	DIAMETER (inches)		FROM (feet)	TO	BOREHOLE DIAM (inches)	2.0	TOTAL DEPTH (feet)	4
PERFORATED CASING	NA	DIAMETER (inches)		FROM (feet)	TO	DATUM	mean sea level NAVD 1988		
GROUT	Type II/V portland cement			FROM (feet) 0.0	TO 4.0	TOP OF CASING		GROUND SURFACE	11.17
SEAL	NA			FROM (feet)	TO	LOGGED BY	Zita Maliga		
FILTER PACK	NA			FROM (feet)	TO	CHECKED BY	Bruce Castle, PG #6082		
REMARKS	Soil samples collected in butyrate liners.								

SAMPLES										
TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0		-		<u>SAND</u>; 100% fine to medium sand; poorly graded; moist; well sorted	SP		
			0		-	1				
			0.5		-					
			0.5		-	2	<u>SILTY SAND</u>; 60% fine to medium sand; 40% silt; moist; trace gravel; well sorted	SM		
10:40	937SB125[2]		0.5		-					
			0.5		-	3				
			0.5		-		<u>SILT</u>; 10% very fine to fine sand; 90% silt; moist	ML		
			0.5		-	4				
							Total Depth of Borehole = 4 feet.			
						5				
						6				
						7				
						8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937				BOREHOLE / WELL NAME	**937SB126**	
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387				PROJECT NAME	**Presidio - Building 937**	
DRILLING METHOD	Direct-Push				PROJECT NUMBER	**A00003.08**	
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet)	TO	DATE STARTED 6/20/06	DATE COMPLETED 6/20/06	
BLANK CASING	NA	DIAMETER (inches)	FROM (feet)	TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 4	
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet)	TO	DATUM	mean sea level NAVD 1988	
GROUT	Type II/V portland cement		FROM (feet) 0.0	TO 4.0	TOP OF CASING	GROUND SURFACE 11.12	
SEAL	NA		FROM (feet)	TO	LOGGED BY	Zita Maliga	
FILTER PACK	NA		FROM (feet)	TO	CHECKED BY	Bruce Castle, PG #6082	
REMARKS	Soil samples collected in butyrate liners.						

SAMPLES										
TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0		-		<u>SAND</u>; 100% sand; poorly graded; moist	SP		
			0		-	1				
			0.5		0.3					
			0.5		1.3	2	<u>SILT WITH SAND</u>; 20% very fine to fine sand; 80% silt; moist; weak mottling	ML		
			0.5		4.0					
			0.5		3.2	3				
11:15	937SB126[3]		0.5		0.8		<u>SILT</u>; 10% sand; 90% silt; moist	ML		
			0.5		3.2		<u>SANDY SILT</u>; 10% gravel; 40% sand; 50% silt; moist; gleyed at 3.5 feet, weathered serpentinite	ML		
						4	Total Depth of Borehole = 4 feet.			
						5				
						6				
						7				
						8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937			BOREHOLE / WELL NAME	**937SB127**		
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387			PROJECT NAME	**Presidio - Building 937**		
DRILLING METHOD	Direct-Push			PROJECT NUMBER	**A00003.08**		
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATE STARTED	6/20/06	DATE COMPLETED	6/20/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet) TO	BOREHOLE DIAM (inches)	2.0	TOTAL DEPTH (feet)	4
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATUM	mean sea level NAVD 1988		
GROUT	Type II/V portland cement		FROM (feet) 0.0 TO 4.0	TOP OF CASING		GROUND SURFACE	11.28
SEAL	NA		FROM (feet) TO	LOGGED BY	Zita Maliga		
FILTER PACK	NA		FROM (feet) TO	CHECKED BY	Bruce Castle, PG #6082		
REMARKS	Soil samples collected in butyrate liners.						

SAMPLES										
TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0.5		-		SAND; 100% fine sand; poorly graded; moist	SP		
			0.5		-	1				
			0.5		0.9					
			0.5		0.8	2				
11:30	937SB127[2]		0.5		1.7					
			0.5		1.4	3				
			0.5		1.4		SILT; 10% sand; 90% silt; moist	ML		
			0.5		1.4		SILT WITH SAND; 25% very fine to medium sand; 75% silt; moist	ML		
						4	Total Depth of Borehole = 4 feet.			
						5				
						6				
						7				
						8				
						9				

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937					BOREHOLE / WELL NAME	**937SB128**
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push					PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet)	TO		DATE STARTED 6/20/06	DATE COMPLETED 6/20/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet)	TO		BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 4
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet)	TO		DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement		FROM (feet) 0.0	TO 4.0		TOP OF CASING	GROUND SURFACE 11.23
SEAL	NA		FROM (feet)	TO		LOGGED BY	Zita Maliga
FILTER PACK	NA		FROM (feet)	TO		CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil samples collected in butyrate liners.						

SAMPLES										
TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0		-		SAND; 100% fine sand; poorly graded; moist	SP		
			0		-	1				
			0.5		0.0					
			0.5		0.0	2				
			0.5		1.6		SILT; 100% silt; moist; gravel at interface (<1 inch)	ML		
			0.5		0.8	3				
11:54	937SB128[3]		0.5		2.5		SILT; gleyed; weathered serpentinite	ML		
			0.5		2.4	4	Total Depth of Borehole = 4 feet.			
						5				
						6				
						7				
						8				
						9				

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937			BOREHOLE / WELL NAME	937SB129
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387			PROJECT NAME	**Presidio - Building 937**
DRILLING METHOD	Direct-Push			PROJECT NUMBER	**A00003.08**
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATE STARTED 6/21/06	DATE COMPLETED 6/21/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet) TO	BOREHOLE DIAM (inches) 2.0	TOTAL DEPTH (feet) 9
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet) TO	DATUM	mean sea level NAVD 1988
GROUT	Type II/V portland cement		FROM (feet) 0.0 TO 9.0	TOP OF CASING	GROUND SURFACE 11.23
SEAL	NA		FROM (feet) TO	LOGGED BY	Zita Maliga
FILTER PACK	NA		FROM (feet) TO	CHECKED BY	Bruce Castle, PG #6082
REMARKS	Soil samples collected in butyrate liners.				

TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
							SAND; 100% sand; poorly graded; moist; trace gravel	SP		
			0.25		-					
			0.5		-	1				
			0.5		-		SILTY SAND; 5% gravel; 60% fine to medium sand; 35% silt; moist	SM		
	937SB129[2] [DUP]		0.5		-	2				
10:45	937SB129[2]		0.5		-		SANDY SILT; 5% gravel; 40% sand; 55% silt; moist	ML		
10:35	937SB129[2.5]		0.25		-	3				
			0.5		-		SILTY SAND; 20% gravel; 50% sand; 30% silt; moist to wet; gleyed; weathered serpentinite bedrock with thin interbeds of differential weathering	SM		
			0.5		-	4				
			0.5		-					
			0.5		-	5				
			0.5		-					
			0.25		-	6				
			0.5		-					
			0.5		-	7				
			0.5		-					
			0.5		-	8				
			0.5		-					
						9	Total Depth of Borehole = 9 feet.			

Borehole & Well Construction Log

Erler & Kalinowski, Inc.

BOREHOLE LOCATION	Inside Building 937					BOREHOLE / WELL NAME	**937SB130**		
DRILLING COMPANY	Precision Sampling, Inc., C-57 Lic. # 636387					PROJECT NAME	**Presidio - Building 937**		
DRILLING METHOD	Direct-Push					PROJECT NUMBER	**A00003.08**		
CONDUCTOR CASING	NA	DIAMETER (inches)	FROM (feet)		TO	DATE STARTED	6/21/06	DATE COMPLETED	6/21/06
BLANK CASING	NA	DIAMETER (inches)	FROM (feet)		TO	BOREHOLE DIAM (inches)	2.0	TOTAL DEPTH (feet)	9
PERFORATED CASING	NA	DIAMETER (inches)	FROM (feet)		TO	DATUM	mean sea level NAVD 1988		
GROUT	Type II/V portland cement		FROM (feet)	0.0	TO 9.0	TOP OF CASING		GROUND SURFACE	11.32
SEAL	NA		FROM (feet)		TO	LOGGED BY	Zita Maliga		
FILTER PACK	NA		FROM (feet)		TO	CHECKED BY	Bruce Castle, PG #6082		
REMARKS	Soil samples collected in butyrate liners.								

SAMPLES										
TIME COLLECTED	SAMPLE NAME	SAMPLE TYPE	RECOVERY (feet)	BLOW COUNT	OVM / H2S (ppmv)	DEPTH (feet)	MATERIAL DESCRIPTION AND DRILLING NOTES	USCS CODE	GRAPHIC LOG	WELL CONSTRUCTION
			0.3		-		SILTY SAND; 10% gravel; 75% fine sand; 15% silt; moist; gleyed; trace gravel, weathered serpentinite	SM		
			0.5		-	1	SAND	SP		
							SILT; 20% gravel; 20% sand; 40% silt; 10% clay; low plasticity; moist; weathered serpentinite	ML		
			0.5		-					
12:15	937SB130[2]		0.5		-	2				
			0.5		-					
			0.5		-	3	-grades to greenish gray [5G 6/1] at 3 ft bgs.			
			0.5		-					
			0.5		-	4				
			0.5		-		▼			
			0.5		-	5				
			0.5		-					
			0		-	6				
			0.5		-					
			0.5		-	7				
			0.5		-					
			0.5		-	8				
			0.5		-					
						9	Total Depth of Borehole = 9 feet.			

1-EKI STD - BH AND MW LOG PRESIDIO-BLDG937_10JULY2006.GPJ EKIF_V5.GDT 9/5/06

APPENDIX E

SURVEY RESULTS

PLS Surveys, Inc.
2220 Livingston Street, Suite 202
Oakland, California 94606

510.261.0900
FAX 510.261.3303
e-mail: plssurv@pacbell.net

LETTER OF TRANSMITTAL

DATE 7-27-06 JOB NO. 06-043

ATTENTION John Dewitt

RE:

Build 937 & 933

TO Erler & Kalinowski

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ________ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ ________

COPIES	DATE	NO.	DESCRIPTION
1		1	map of Site
1		2	Coordinate list

RECEIVED
JUL 28 2006
ERLER & KALINOWSKI, INC.
COPY

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit ________ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit ________ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return ________ corrected prints

☐ For review and comment ☐ ________

☐ FOR BIDS DUE ________ 19 ________ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS ________

COPY TO ________

SIGNED: [signature]

RECYCLED PAPER:
Contents: 40% Pre-Consumer • 10% Post-Consumer

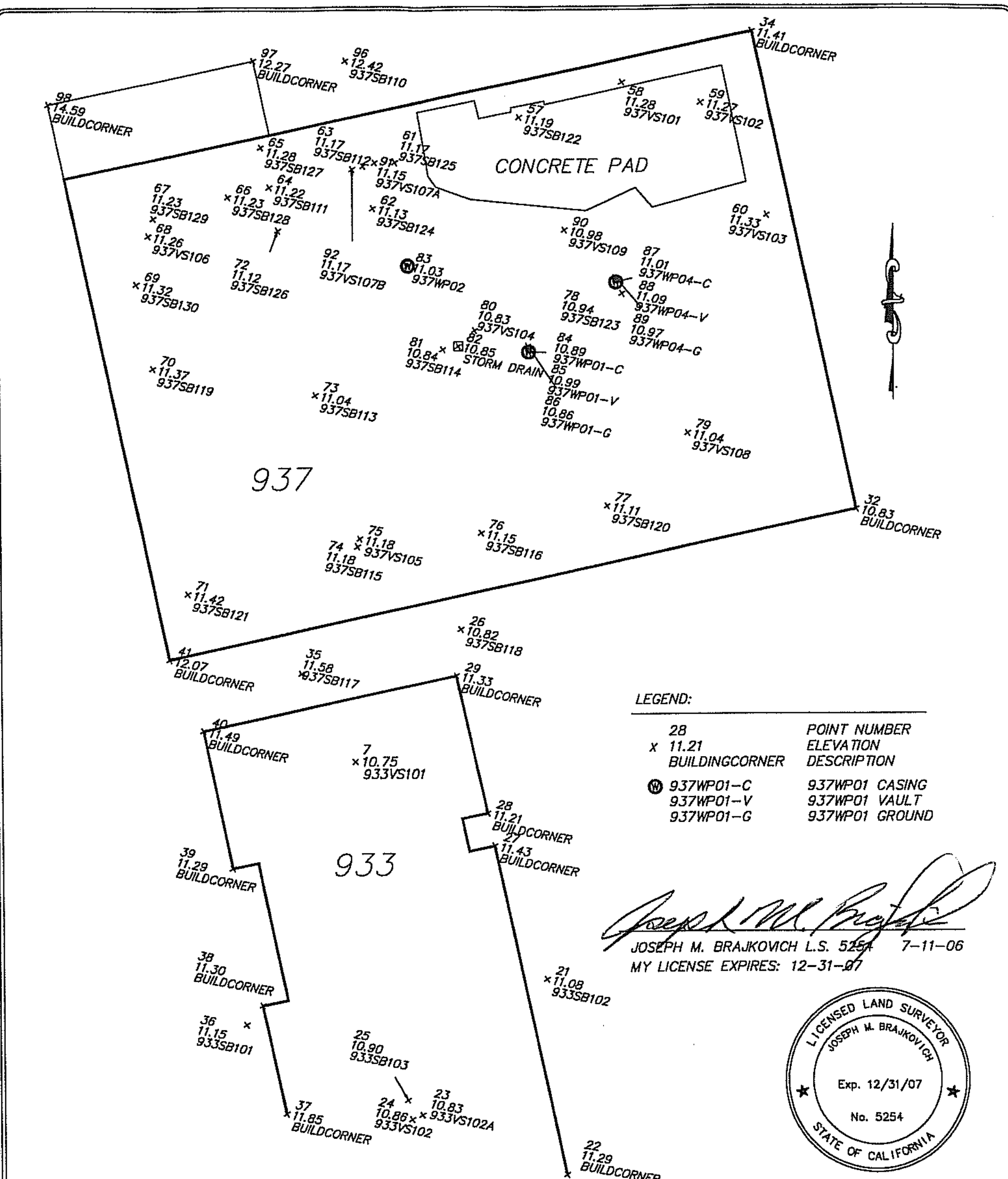
If enclosures are not as noted, kindly notify us at once.

SAMPLES2.CR5 07/27/06 07:27:53

Point	Northing	Easting	Elevation	Description
21	2,121,756.8927	5,992,845.5419	11.08	933SB102
22	2,121,711.9275	5,992,849.7770	11.29	BUILDCORNER
23	2,121,725.7730	5,992,816.4235	10.83	933VS102A
24	2,121,724.7472	5,992,814.0406	10.86	933VS102
25	2,121,729.1599	5,992,813.0899	10.90	933SB103
26	2,121,837.1988	5,992,826.4513	10.82	937SB118
27	2,121,787.5733	5,992,833.7800	11.43	BUILDCORNER
28	2,121,795.0937	5,992,832.2297	11.21	BUILDCORNER
29	2,121,826.5989	5,992,825.2820	11.33	BUILDCORNER
32	2,121,864.4119	5,992,917.3671	10.83	BUILDCORNER
34	2,121,974.3743	5,992,893.8004	11.41	BUILDCORNER
35	2,121,827.1993	5,992,789.4900	11.58	937SB117
36	2,121,746.7429	5,992,776.0567	11.15	933SB101
37	2,121,726.2417	5,992,785.1155	11.85	BUILDCORNER
38	2,121,751.1516	5,992,779.7805	11.30	BUILDCORNER
39	2,121,782.6556	5,992,773.2234	11.29	BUILDCORNER
40	2,121,814.1379	5,992,766.7589	11.49	BUILDCORNER
41	2,121,830.5145	5,992,759.0570	12.07	BUILDCORNER
57	2,121,954.8105	5,992,840.6963	11.19	937SB122
58	2,121,962.7120	5,992,864.2138	11.28	937VS101
59	2,121,957.9038	5,992,882.1001	11.27	937VS102
60	2,121,932.0194	5,992,897.1012	11.33	937VS103
61	2,121,944.3919	5,992,811.8688	11.17	937SB125
62	2,121,933.8344	5,992,806.6948	11.13	937SB124
63	2,121,943.5535	5,992,804.5522	11.17	937SB112
64	2,121,938.8550	5,992,782.9233	11.22	937SB111
65	2,121,948.0533	5,992,780.9807	11.28	937SB127
66	2,121,936.6167	5,992,773.3472	11.23	937SB128
67	2,121,931.7583	5,992,756.1142	11.23	937SB129
68	2,121,927.7399	5,992,754.8740	11.26	937VS106
69	2,121,916.5533	5,992,752.0942	11.32	937SB130
70	2,121,897.2130	5,992,755.7101	11.37	937SB119
71	2,121,845.5408	5,992,763.4198	11.42	937SB121
72	2,121,928.9407	5,992,784.8641	11.12	937SB126
73	2,121,891.0107	5,992,793.2643	11.04	937SB113
74	2,121,856.2042	5,992,802.6644	11.18	937SB115
75	2,121,857.9839	5,992,803.1997	11.18	937VS105
76	2,121,859.2431	5,992,831.3368	11.15	937SB116
77	2,121,865.3260	5,992,860.2341	11.11	937SB120
78	2,121,914.0946	5,992,863.9926	10.94	937SB123
79	2,121,881.9132	5,992,878.7971	11.04	937VS108
80	2,121,905.7645	5,992,830.1661	10.83	937VS104
81	2,121,901.4259	5,992,822.7224	10.84	937SB114
82	2,121,902.1661	5,992,826.4012	10.85	STORM DRAIN
83	2,121,920.6328	5,992,814.6580	11.03	937WP02
84	2,121,900.8372	5,992,842.5331	10.89	937WP01-C
85	2,121,901.4191	5,992,842.4953	10.99	937WP01-V
86	2,121,902.1524	5,992,842.3511	10.86	937WP01-G
87	2,121,916.7500	5,992,862.6301	11.01	937WP04-C
88	2,121,917.2177	5,992,862.5537	11.09	937WP04-V
89	2,121,917.8031	5,992,862.4705	10.97	937WP04-G
90	2,121,928.8776	5,992,850.9970	10.98	937VS109
91	2,121,944.3598	5,992,807.1946	11.15	937VS107A
92	2,121,942.9292	5,992,802.0549	11.17	937VS107B
96	2,121,967.9060	5,992,800.6896	12.42	937SB110
97	2,121,967.9935	5,992,779.4048	12.27	BUILDCORNER
98	2,121,958.0344	5,992,732.0795	14.59	BUILDCORNER

JOSEPH M. BRAJKOVICH L.S. 5254
MY LICENSE EXPIRES: 12-31-07

LICENSED LAND SURVEYOR
JOSEPH M. BRAJKOVICH
Exp. 12/31/07
No. 5254
STATE OF CALIFORNIA



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ENVIRONMENTAL SAMPLING LOCATIONS

FOR BUILDINGS 933 & 937
PRESIDIO
(EKI A000003.08)

SAN FRANCISCO CALIFORNIA

SCALE	1" = 30'
DATE REV	07/27/06
BY	JMB/JET
JOB NO.	06-043

APPENDIX F

DATA VALIDATION REPORT

DataVal, Inc.

RECEIVED

SEP 22 2006

ERLER & KALINOWSKI, INC.

TO: John DeWitt, Erler & Kalinowski, Inc. September 19, 2006

FROM: Donna Breaux, DataVal, Inc. DB 9/20/06 EKI Project No. A000003.08

DATA VALIDATION SUMMARY REPORT FOR THE BUILDING 937 SAMPLING EVENT, THE PRESIDIO OF SAN FRANCISCO, CA

LABORATORY: Severn Trent Laboratories, Inc., San Francisco, CA

SAMPLING DATES: June 14, 20, 21 and 28, 2006

Data validation of Level III and Level IV laboratory data packages was performed according to the project-specific guidelines. These guidelines were outlined in the Presidio-wide Quality Assurance Project Plan, Sampling and Analysis Plan, April, 2001; the U. S. Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Organic Data Review, October, 1999; and the U. S. Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October, 2004.

The data were reviewed for holding times, surrogate recoveries, blanks, laboratory control samples, laboratory duplicate samples, matrix spikes and matrix spike duplicates, GC/MS tunes, ICP interference check standards, ICP serial dilutions, initial calibrations, continuing calibration verification standards, internal standards, field QC samples and compound identification and quantitation.

The following paragraphs highlight the essential findings of the data validation effort:

I. <u>Volatile Organic Compounds by GC/MS (8260B)</u>

Overall, the data are usable as reported with any added qualifiers. Qualifications were required for the reasons noted in Sections C, H, I and J.

A. <u>Reporting Limits</u>

The laboratory reporting limits for VOCs in water and soil matrix samples met the project-required reporting limits, with the following exceptions:

1. The laboratory reporting limits did not meet the project required reporting limits listed in Table 2-6.8-1 of the QAPP for the following compounds in water matrix samples: the laboratory reported 5 ug/L for methyl tertiary-butyl ether; the project required reporting limit was 2 ug/L. The laboratory reported 5 ug/L for methylene chloride; the project required reporting limit was 4.5 ug/L. The laboratory reported 50 ug/L for acetone, methyl ethyl ketone, methyl isobutyl ketone and vinyl acetate; the project required reporting limit was 10 ug/L. The laboratory reported 1 ug/L for bromoform, bromomethane, chloroethane,

chloroform, chloromethane and xylenes; the project required reporting limit was 0.5 ug/L.

2. The laboratory reporting limits did not meet the project required reporting limits listed in Table 2-6.8-1 of the QAPP for the following compounds in soil matrix samples: the laboratory reported 50 ug/kg for acetone, methyl ethyl ketone, methyl isobutyl ketone and vinyl acetate; the project required reporting limit was 10 ug/kg. The laboratory reported 10 ug/kg for methylene chloride and xylenes; the project required reporting limit was 5 ug/kg.
3. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times

Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries

Surrogate spike recoveries met QC acceptance criteria for all project samples, with the following exceptions:

1. The percent recovery for surrogate toluene-d8 was outside the 88%-110% project acceptance criteria in sample 937SB112 DUP (720-4217-2) at 112%. The detected result in this sample was qualified as estimated with a high bias (J+).
2. The percent recoveries for surrogate 4-bromofluorobenzene were outside the 59%-113% project acceptance criteria in samples 937SB112[2] (720-4215-3) at 124%, 937SB112[2]DUP (720-4215-4) at 138% and 933SB103[2.5] (720-4215-9) at 166%. The detected results in these samples were qualified as estimated with a high bias (J+).
3. Samples with non-detected results and high-failing surrogate recoveries did not require qualification, and were not noted in this report.

See Table 2 of this report for a summary of qualifications due to surrogate percent recovery failures.

D. Blanks

Target analytes were not observed in any laboratory method blanks associated with the project samples. Target analytes were not observed in the trip blanks associated with the project samples.

E. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate

All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples.

G. GC/MS Tunes

All QC criteria were met for the GC/MS tunes associated with the project samples.

H. Initial Calibration

Initial calibration criteria were met for all calibration standards associated with the project samples, with the following exceptions:

1. The 5/9/06 soil matrix initial calibration analyzed on instrument GCMS-D had three compounds with average relative response factors (RRFs) less than the 0.05 acceptance criteria: acetone (0.026), methyl ethyl ketone (0.039) and methyl isobutyl ketone (0.012). The results for acetone, methyl ethyl ketone and methyl isobutyl ketone in the associated samples were non-detect and qualified as rejected (R).
2. The 5/24/06 water matrix initial calibration analyzed on instrument Saturn 3900-G had two compounds with average RRFs less than the 0.05 acceptance criteria: methyl ethyl ketone (0.021) and methyl isobutyl ketone (0.016). The results for methyl ethyl ketone and methyl isobutyl ketone in the associated samples were non-detect and qualified as rejected (R).
3. The 6/14/06 water matrix initial calibration analyzed on instrument Saturn 3900-F had two compounds with average RRFs less than the 0.05 acceptance criteria: methyl ethyl ketone (0.016) and methyl isobutyl ketone (0.026). The results for methyl ethyl ketone and methyl isobutyl ketone in the associated samples were non-detect and qualified as rejected (R).
4. The 6/23/06 soil matrix initial calibration analyzed on instrument MSDCHEM-1 had three compounds with average RRFs less than the 0.05 acceptance criteria: acetone (0.017), methyl ethyl ketone (0.027) and methyl isobutyl ketone (0.035). The detected results for acetone in the associated samples were qualified as estimated (J) and the non-detect results for acetone, methyl ethyl ketone and methyl isobutyl ketone in the associated samples were qualified as rejected (R).

See Table 2 of this report for a summary of qualifications due to initial calibration minimum average relative response factor failure.

I. Continuing Calibration

Continuing calibration criteria were met for all continuing calibration standards associated with the project samples, with the following exceptions:

1. The 6/21/06 at 8:55 water matrix continuing calibration verification (CCV) standard analyzed on instrument Saturn 3900-G had two compounds with daily relative response factors (RRFs) less than the 0.05 acceptance criteria: methyl ethyl ketone (0.018) and methyl isobutyl ketone (0.012). The results for methyl ethyl ketone and methyl isobutyl ketone in the associated samples were non-detect and qualified as rejected (R).

2. The same CCV (6/21/06 at 8:55) had vinyl acetate with a percent difference (%D) less than the +/-25%D acceptance criteria at -32%. The results for vinyl acetate in the associated samples were non-detect and qualified as estimated (UJ).
3. The 6/21/06 at 11:40 soil matrix CCV analyzed on instrument GCMS-D had three compounds with RRFs less than the 0.05 acceptance criteria: acetone (0.019), methyl ethyl ketone (0.039) and methyl isobutyl ketone (0.011). The results for acetone, methyl ethyl ketone and methyl isobutyl ketone in the associated samples were non-detect and qualified as rejected (R).
4. The same CCV (6/21/06 at 11:40) had two compounds with %Ds less than the +/-25%D acceptance criteria: acetone (-27%) and methyl tertiary-butyl ether (-41%). The results for methyl-tertiary butyl ether in the associated samples were non-detect and qualified as estimated (UJ). The results for acetone in the associated samples were previously rejected due to minimum RRF failure, and further qualification was not required.
5. The 6/22/06 at 9:22 water matrix CCV analyzed on instrument Saturn 3900-F had two compounds with RRFs less than the 0.05 acceptance criteria: methyl ethyl ketone (0.016) and methyl isobutyl ketone (0.024). The results for methyl ethyl ketone and methyl isobutyl ketone in the associated samples were non-detect and qualified as rejected (R).
6. The 6/26/06 at 11:13 soil matrix CCV analyzed on instrument MSDCHEM-1 had three compounds with RRFs less than the 0.05 acceptance criteria: acetone (0.012), methyl ethyl ketone (0.020) and methyl isobutyl ketone (0.015). The results for acetone, methyl ethyl ketone and methyl isobutyl ketone in the associated samples were non-detect and qualified as rejected (R).
7. The same CCV (6/26/06 at 11:13) had four compounds with %Ds less than the +/-25%D acceptance criteria: acetone (-29%), vinyl acetate (-70%), methyl ethyl ketone (-33%) and methyl isobutyl ketone (-58%). The results for vinyl acetate in the associated samples were non-detect and qualified as estimated (UJ). The results for acetone, methyl ethyl ketone and methyl isobutyl ketone in the associated samples were previously rejected due to minimum RRF failure, and further qualification was not required.
8. The 6/26/06 at 14:51 soil matrix CCV analyzed on instrument GCMS-D had three compounds with RRFs less than the 0.05 acceptance criteria: acetone (0.016), methyl ethyl ketone (0.037) and methyl isobutyl ketone (0.012). The results for acetone, methyl ethyl ketone and methyl isobutyl ketone in the associated samples were non-detect and qualified as rejected (R).
9. The same CCV (6/26/06 at 14:51) had three compounds with %Ds less than the +/-25%D acceptance criteria: acetone (-38%), vinyl acetate (-34%) and hexachlorobutadiene (-26%). The results for vinyl acetate and hexachlorobutadiene in the associated samples were non-detect and qualified as estimated (UJ). The results for acetone in the

associated samples were previously rejected due to minimum RRF failure, and further qualification was not required.

10. The 6/27/06 at 12:00 soil matrix CCV analyzed on instrument MSDCHEM-1 had three compounds with RRFs less than the 0.05 acceptance criteria: acetone (0.017), methyl ethyl ketone (0.027) and methyl isobutyl ketone (0.035). The detected results for acetone in the associated samples were qualified as estimated (J) and the non-detected results for acetone, methyl ethyl ketone and methyl isobutyl ketone in the associated samples were qualified as rejected (R).
11. The same CCV (6/27/06 at 12:00) had two compounds with %Ds less than the +/-25%D acceptance criteria: trichlorofluoromethane (-31%) and 1,2-dichloroethane (-26%). The results for trichlorofluoromethane and 1,2-dichloroethane in the associated samples were non-detect and qualified as estimated (UJ).
12. Qualification was not required for samples with non-detect results associated with high-failing CCVs. Those failures were not noted in this report.

See Table 2 of this report for a summary of qualifications due to continuing calibration percent difference and minimum relative response factor failures.

J. Internal Standards

Internal standard areas and retention times met QC acceptance criteria for all project samples, with the following exceptions:

1. Two project samples had internal standard areas outside the -50% to +100% acceptance criteria. The results for the compounds associated with the outlying internal standards were non-detect and qualified as estimated (UJ). The following table lists the samples with failing internal standards.

Project Sample ID	Laboratory Sample ID	Internal Standard	Area Counts	Area Acceptance Range
937SB112[2]DUP	720-4215-4	1,4-Dichlorobenzene-d4	170511	178225-712900
933SB103[2.5]	720-4215-9	1,4-Dichlorobenzene-d4	118522	178225-712900

See Table 2 of this report for a summary of samples qualified for internal standard area count failure.

K. Compound Identification and Quantitation

Samples 937WP01 (720-4114-1), 933SB101 (720-4194-1), 937SB117 (720-4217-10), 937SB111[2] (720-4197-1), 937SB126[3] (720-4197-6) and 933SB103[2.5] (720-4215-9) received full (Level IV) data validation. This included re-calculation of surrogate values, GC/MS tunes, initial and continuing calibrations and internal standard areas; in addition to re-calculation of all reported results for VOCs in these samples. The results for

VOCs were re-calculated and verified as correctly reported by the laboratory for the above listed samples.

II. Total Petroleum Hydrocarbons – TPH-Gasoline Range (8015B)

Overall, the data are usable as reported. Qualification was not required.

A. Reporting Limits
The laboratory reporting limit for TPH-gasoline in soil matrix samples met the project-required reporting limits. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times
Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries
Surrogate spike recoveries met QC acceptance criteria for all project samples.

D. Blanks
Target analytes were not observed in any laboratory method blanks associated with the project samples.

E. Laboratory Control Samples
All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate
All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples.

G. Initial Calibration
Initial calibration criteria were met for all calibration standards associated with the project samples.

H. Continuing Calibration
Continuing calibration criteria were met for all continuing calibration standards associated with the project samples.

I. Compound Identification and Quantitation
Sample 933SB103[2.5] (720-4215-9) received full (Level IV) data validation. This included re-calculation of surrogate values and initial and continuing calibrations; in addition to re-calculation of all reported results for TPH-gasoline in this sample. The result for TPH-gasoline was re-calculated and verified as correctly reported by the laboratory for the above listed sample.

III. Total Petroleum Hydrocarbons – TPH-Diesel Range (8015B)

Overall, the data are usable as reported. Qualification was not required.

A. Reporting Limits

The laboratory reporting limits for TPH-diesel in soil matrix samples met the project-required reporting limits. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times

Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries

Surrogate spike recoveries met QC acceptance criteria for all project samples.

D. Blanks

Target analytes were not observed in any laboratory method blanks associated with the project samples.

E. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate

All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples, with the following exception:

1. The data validation effort revealed that the TPH-diesel results for QC samples 933SB103[2.5] MS/MSD were incorrectly calculated by the laboratory. The reported percent recoveries for this MS/MSD pair were outside the 65%-135% project acceptance criteria. The laboratory confirmed that TPH-diesel results in the MS/MSD were incorrectly calculated. However, they did not provide a revised report with corrected percent recoveries. When the TPH-diesel results for the MS/MSD were calculated correctly, the percent recoveries for diesel met project acceptance criteria, and qualification was not required. (QC Prep batch 720-10212) See Section I of this report for additional comments.

G. Initial Calibration

Initial calibration criteria were met for all calibration standards associated with the project samples.

H. Continuing Calibration

Continuing calibration criteria were met for all continuing calibration standards associated with the project samples.

I. Compound Identification and Quantitation

Sample 933SB103[2.5] (720-4215-9) received full (Level IV) data validation. This included re-calculation of surrogate values and initial and continuing calibrations; in addition to re-calculation of all reported results for TPH-diesel in this sample. The result for TPH-diesel was re-calculated and verified as correctly reported by the laboratory for the above listed sample.

As noted in Section F of this report, the data validation effort revealed that the TPH-diesel results for QC samples 933SB103[2.5] MS/MSD were incorrectly calculated by the laboratory. The laboratory was asked to verify that the results reported for the project samples were not affected by this error. The laboratory confirmed that the results for TPH-diesel in the project samples were analyzed using a different initial calibration on an alternate instrument, and the calculation error did not affect any reported sample results from the project site.

Documentation that silica gel clean-up was performed on the sample extracts was not present in the data packages. This procedure is a requirement in the QAPP (Appendix 2, Section 6.3).

IV. Metals (6010B/6020/7471A)

Overall, the data are usable as reported with any added qualifiers. Qualifications were required for the reasons noted in Section H.

A. Reporting Limits

The laboratory reporting limits for metals in soil matrix samples met the project-required reporting limits. It should be noted that the reporting limits for all soils were raised due to dry weight correction. Project required reporting limits were not provided in the project QAPP for STLC or TCLP leachates.

B. Holding Times

Technical holding time criteria were met for all project samples.

C. Blanks

Target analytes were not observed in any laboratory method blanks associated with the project samples.

D. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

E. Matrix Spike/Matrix Spike Duplicate

All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples, with the following exception:

1. The percent recoveries for chromium and nickel were outside the 75%-125% project acceptance criteria in QC sample 937SK01 (720-4380-1)

MS. The sample was diluted fifty-fold for chromium and nickel analysis and qualification was not required. (QC Batch 580-8707)

F. Laboratory Duplicate Samples
All QC criteria were met for the laboratory duplicate samples associated with the project samples.

G. ICP Interference Check Standards
All QC criteria were met for the ICP interference check standards associated with the project samples.

H. ICP Serial Dilution
All QC criteria were met for the ICP serial dilutions associated with the project samples, with the following exceptions:
1. The percent difference (%D) failed the 10% acceptance criteria for zinc in the serial dilution of sample 933SB103[2.5] (720-4215-9) at 46%. The detected result for zinc in the associated sample was qualified as estimated (J). (QC Batch 580-8323)
2. The %D failed the 10% acceptance criteria for arsenic in the serial dilution of sample 937SK01 (720-4380-1) at 35%. The detected result for arsenic in the associated sample was qualified as estimated (J). (QC Batch 580-8670)

See Table 2 of this report for a summary of qualifications due to serial dilution percent difference failure.

I. Initial and Continuing Calibrations
All initial and continuing calibration standards associated with the project samples met QC acceptance criteria.

J. Compound Identification and Quantitation
Sample 937SB103[2.5] (720-4215-9) received full (Level IV) data validation. This included re-calculation of all reported results for metals in this sample. The results for metals were re-calculated and verified as correctly reported by the laboratory for the above listed sample.

SUMMARY

The attached Table 1 lists the samples and analyses that were included in the data validation effort. This table also designates which samples/analyses received Level IV data validation. The attached Table 2 summarizes the data qualifications required for the project samples for each test method included in the data packages.

USABILITY

The quality control criteria were reviewed, and other than those discussed above, all criteria were met and the data are considered acceptable. Rejected sample results (R) are not usable for any purpose. Estimated sample results (J/UJ) are usable only for limited purposes. Based upon the cursory and full data validation, all other results are considered valid and usable for all purposes.

VALIDATION QUALIFIERS IDENTIFICATION

The definitions of the following qualifiers are prepared according to the document, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," October, 1999.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. *A minus sign (-) indicates the numerical value has a low bias. A plus sign (+) indicates the numerical value has a high bias.*

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following paragraphs highlight the essential findings of the field duplicate samples:

Field duplicate precision was evaluated by calculating the relative percent difference (RPD) between detected results in the original sample and its associated duplicate. The control limit used for field duplicates was a relative percent difference less than or equal to 50 percent, or the absolute difference of the two results must be less than the reporting limit for waters or less than twice the reporting limit for soils for those analytes that were at or near the detection limit. Six samples were collected in duplicate for the Building 937 sampling event.

Project Sample Primary ID	Laboratory Sample ID	Project Sample Duplicate ID	Laboratory Sample ID
937WP01	720-4114-1	937WP01 DUP	720-4114-4
937WP04	720-4114-2	937WP04 DUP	720-4114-3
937SB112[2]	720-4215-3	937SB112[2]DUP	720-4215-4
937SB129[2]	720-4215-5	937SB129[2]DUP	720-4215-6
937SB112	720-4217-1	937SB112 DUP	720-4217-2
937SB129	720-4217-4	937SB129 DUP	720-4217-5

The attached Table 3 summarizes the field duplicate sample results. The detected results of the original sample and the associated duplicate sample were compared and the calculated RPDs reported. All RPDs met the 50 percent precision control limit requirement, with the following exception:

1. In field duplicates 937SB112[2] and 937SB112[2]DUP, the relative percent difference (RPD) between the detected results failed the 50% acceptance criteria for tetrachloroethene at 73%.

The analysis of field duplicate samples is a measure of both field and analytical precision. The imprecision in the results in the field duplicate pairs listed above may be due to the sample matrix, sampling or laboratory technique, sample non-homogeneity or method defects. With the exceptions noted above, the results between the field duplicate pairs matched well. Since the effect on the quality of the data is not known, data is not qualified for field duplicate failure.

Table 1
Sample Summary
Building 937
The Presidio of San Francisco, CA

Site Sample ID	Laboratory Sample ID	Date Sampled	Analyses	Sample Type
937WP01	**720-4114-1**	**14-Jun-06**	**Volatile Organic Compounds (8260B)**	**Water (1)**
937WP04	720-4114-2	14-Jun-06	Volatile Organic Compounds (8260B)	Water (2)
937WP04 DUP	720-4114-3	14-Jun-06	Volatile Organic Compounds (8260B)	FD (2)
937WP01 DUP	720-4114-4	14-Jun-06	Volatile Organic Compounds (8260B)	FD (1)
933SB101	**720-4194-1**	**20-Jun-06**	**Volatile Organic Compounds (8260B)**	**Water**
933SB102	720-4194-2	20-Jun-06	Volatile Organic Compounds (8260B)	Water
937SB111	720-4194-3	20-Jun-06	Volatile Organic Compounds (8260B)	Water
937SB113	720-4194-4	20-Jun-06	Volatile Organic Compounds (8260B)	Water
937SB114	720-4194-5	20-Jun-06	Volatile Organic Compounds (8260B)	Water
937SB119	720-4194-6	20-Jun-06	Volatile Organic Compounds (8260B)	Water
TB	720-4194-7	20-Jun-06	Volatile Organic Compounds (8260B)	Trip Blank
937SB115	720-4194-8	20-Jun-06	Volatile Organic Compounds (8260B)	Water
937SB111[2]	**720-4197-1**	**20-Jun-06**	**Volatile Organic Compounds (8260B)**	**Soil**
937SB113[2.5]	720-4197-2	20-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB119[2]	720-4197-3	20-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB124[3.5]	720-4197-4	20-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB125[2]	720-4197-5	20-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB126[3]	**720-4197-6**	**20-Jun-06**	**Volatile Organic Compounds (8260B)**	**Soil**
937SB127[2]	720-4197-7	20-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB128[3]	720-4197-8	20-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB114[1.5]	720-4215-1	20-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB115[2]	720-4215-2	20-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB112[2]	720-4215-3	21-Jun-06	Volatile Organic Compounds (8260B)	Soil (3)
937SB112[2]DUP	720-4215-4	21-Jun-06	Volatile Organic Compounds (8260B)	FD (3)
937SB129[2]	720-4215-5	21-Jun-06	Volatile Organic Compounds (8260B)	Soil (4)
937SB129[2]DUP	720-4215-6	21-Jun-06	Volatile Organic Compounds (8260B)	FD (4)
937SB130[2]	720-4215-7	21-Jun-06	Volatile Organic Compounds (8260B)	Soil
937SB110[2]	720-4215-8	21-Jun-06	Volatile Organic Compounds (8260B)	Soil
933SB103[2.5]	**720-4215-9**	**21-Jun-06**	**VOCs (8260B), TPH-Gasoline (8015B), TPH-Diesel (8015B), Metals (6020, 7471A)**	**Soil**
937SB112	720-4217-1	21-Jun-06	Volatile Organic Compounds (8260B)	Water (5)
937SB112 DUP	720-4217-2	21-Jun-06	Volatile Organic Compounds (8260B)	FD (5)
937SB130	720-4217-3	21-Jun-06	Volatile Organic Compounds (8260B)	Water
937SB129	720-4217-4	21-Jun-06	Volatile Organic Compounds (8260B)	Water (6)
937SB129 DUP	720-4217-5	21-Jun-06	Volatile Organic Compounds (8260B)	FD (6)
TB2	720-4217-6	21-Jun-06	Volatile Organic Compounds (8260B)	Trip Blank
937SB110	720-4217-7	21-Jun-06	Volatile Organic Compounds (8260B)	Water
933SB103	720-4217-8	21-Jun-06	Volatile Organic Compounds (8260B)	Water
937SB116	720-4217-9	21-Jun-06	Volatile Organic Compounds (8260B)	Water
937SB117	**720-4217-10**	**21-Jun-06**	**Volatile Organic Compounds (8260B)**	**Water**
937SK01	720-4380-1	28-Jun-06	BTEX (8260B), TPH-Gasoline (8015B), TPH-Diesel (8015B), Metals (6020, 7471A)	Soil
937SK01	720-4747-1	28-Jun-06	STLC Metals (6010B), TCLP Metals (6010B)	Soil

TPH: Total Petroleum Hydrocarbons
BTEX: Benzene, toluene, ethylbenzene, xylenes
VOCs: Volatile Organic Compounds
FD: Field duplicate of previous numbered sample, (1), (2), etc.
BOLD: Bold typeface indicates samples/analyses that received full (Level IV) data validation
STLC: Soluble threshold limit concentration
TCLP: Toxicity characteristic leaching procedure

Table 2
Qualified Data Summary
Building 937
The Presidio of San Francisco, CA

Sample ID	Laboratory ID	Analysis Method	Compound	Qualifier	Reason
937WP01	720-4114-1	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937WP01	720-4114-1	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937WP01	720-4114-1	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937WP04	720-4114-2	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937WP04	720-4114-2	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937WP04	720-4114-2	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937WP04 DUP	720-4114-3	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937WP04 DUP	720-4114-3	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937WP04 DUP	720-4114-3	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937WP01 DUP	720-4114-4	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937WP01 DUP	720-4114-4	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937WP01 DUP	720-4114-4	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
933SB101	720-4194-1	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
933SB101	720-4194-1	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
933SB101	720-4194-1	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
933SB102	720-4194-2	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
933SB102	720-4194-2	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
933SB102	720-4194-2	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB111	720-4194-3	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB111	720-4194-3	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB111	720-4194-3	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB113	720-4194-4	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB113	720-4194-4	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB113	720-4194-4	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB114	720-4194-5	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB114	720-4194-5	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB114	720-4194-5	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB119	720-4194-6	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB119	720-4194-6	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB119	720-4194-6	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
TB	720-4194-7	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
TB	720-4194-7	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
TB	720-4194-7	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB115	720-4194-8	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB115	720-4194-8	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB111[2]	720-4197-1	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB111[2]	720-4197-1	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB111[2]	720-4197-1	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB111[2]	720-4197-1	8260B	Methyl tertiary-butyl ether	UJ	Continuing calibration verification %D failure
937SB113[2.5]	720-4197-2	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB113[2.5]	720-4197-2	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB113[2.5]	720-4197-2	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB113[2.5]	720-4197-2	8260B	Methyl tertiary-butyl ether	UJ	Continuing calibration verification %D failure
937SB119[2]	720-4197-3	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB119[2]	720-4197-3	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB119[2]	720-4197-3	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB119[2]	720-4197-3	8260B	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937SB119[2]	720-4197-3	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB124[3.5]	720-4197-4	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB124[3.5]	720-4197-4	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB124[3.5]	720-4197-4	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB124[3.5]	720-4197-4	8260B	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937SB124[3.5]	720-4197-4	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB125[2]	720-4197-5	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB125[2]	720-4197-5	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB125[2]	720-4197-5	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB125[2]	720-4197-5	8260B	Methyl tertiary-butyl ether	UJ	Continuing calibration verification %D failure
937SB126[3]	720-4197-6	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB126[3]	720-4197-6	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB126[3]	720-4197-6	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB126[3]	720-4197-6	8260B	Methyl tertiary-butyl ether	UJ	Continuing calibration verification %D failure
937SB127[2]	720-4197-7	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB127[2]	720-4197-7	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB127[2]	720-4197-7	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB127[2]	720-4197-7	8260B	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937SB127[2]	720-4197-7	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure

Table 2
Qualified Data Summary
Building 937
The Presidio of San Francisco, CA

Sample ID	Laboratory ID	Analysis Method	Compound	Qualifier	Reason
937SB128[3]	720-4197-8	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB128[3]	720-4197-8	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB128[3]	720-4197-8	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB128[3]	720-4197-8	8260B	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937SB128[3]	720-4197-8	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB114[1.5]	720-4215-1	8260B	1,2-Dichloroethane	UJ	Continuing calibration verification %D failure
937SB114[1.5]	720-4215-1	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB114[1.5]	720-4215-1	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB114[1.5]	720-4215-1	8260B	Acetone	J	Average and Daily RRF failure
937SB114[1.5]	720-4215-1	8260B	Trichlorofluoromethane	UJ	Continuing calibration verification %D failure
937SB115[2]	720-4215-2	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB115[2]	720-4215-2	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB115[2]	720-4215-2	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB115[2]	720-4215-2	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB112[2]	720-4215-3	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB112[2]	720-4215-3	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB112[2]	720-4215-3	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB112[2]	720-4215-3	8260B	Tetrachloroethene	J+	Surrogate percent recovery failure
937SB112[2]	720-4215-3	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB112[2]DUP	720-4215-4	8260B	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,2,3-Trichlorobenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,2,3-Trichloropopane	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,2,4-Trichlorobenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,2,4-Trimethylbenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,2-Dibromo-3-chloropropane	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,2-Dichlorobenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,2-Dichloroethane	UJ	Continuing calibration verification %D failure
937SB112[2]DUP	720-4215-4	8260B	1,3,5-Trimethylbenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,3-Dichlorobenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	1,4-Dichlorobenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB112[2]DUP	720-4215-4	8260B	2-Chlorotoluene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	4-Chlorotoluene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB112[2]DUP	720-4215-4	8260B	Acetone	R	Average and Daily RRF failure
937SB112[2]DUP	720-4215-4	8260B	Bromobenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	Hexachlorobutadiene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	Isopropylbenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	Isopropyltoluene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	Naphthalene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	n-Butylbenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	Propylbenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	sec-Butylbenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	tert-Butylbenzene	UJ	Internal standard area count failure
937SB112[2]DUP	720-4215-4	8260B	Tetrachloroethene	J+	Surrogate percent recovery failure
937SB112[2]DUP	720-4215-4	8260B	Trichlorofluoromethane	UJ	Continuing calibration verification %D failure
937SB129[2]	720-4215-5	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB129[2]	720-4215-5	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB129[2]	720-4215-5	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB129[2]	720-4215-5	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB129[2]DUP	720-4215-6	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB129[2]DUP	720-4215-6	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB129[2]DUP	720-4215-6	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB129[2]DUP	720-4215-6	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
937SB130[2]	720-4215-7	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB130[2]	720-4215-7	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB130[2]	720-4215-7	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB130[2]	720-4215-7	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure

Table 2
Qualified Data Summary
Building 937
The Presidio of San Francisco, CA

Sample ID	Laboratory ID	Analysis Method	Compound	Qualifier	Reason
937SB110[2]	720-4215-8	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB110[2]	720-4215-8	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure, CCV %D failure
937SB110[2]	720-4215-8	8260B	Acetone	R	Average and Daily RRF failure, CCV %D failure
937SB110[2]	720-4215-8	8260B	Vinyl acetate	UJ	Continuing calibration verification %D failure
933SB103[2.5]	720-4215-9	8260B	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,2,3-Trichlorobenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,2,3-Trichloropopane	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,2,4-Trichlorobenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,2,4-Trimethylbenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,2-Dibromo-3-chloropropane	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,2-Dichlorobenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,2-Dichloroethane	UJ	Continuing calibration verification %D failure
933SB103[2.5]	720-4215-9	8260B	1,3,5-Trimethylbenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,3-Dichlorobenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	1,4-Dichlorobenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
933SB103[2.5]	720-4215-9	8260B	2-Chlorotoluene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	4-Chlorotoluene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
933SB103[2.5]	720-4215-9	8260B	Acetone	J	Average and Daily RRF failure, Surrogate %R failure
933SB103[2.5]	720-4215-9	8260B	Bromobenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	Hexachlorobutadiene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	Isopropylbenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	Isopropyltoluene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	Naphthalene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	n-Butylbenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	Propylbenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	sec-Butylbenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	tert-Butylbenzene	UJ	Internal standard area count failure
933SB103[2.5]	720-4215-9	8260B	Trichlorofluoromethane	UJ	Continuing calibration verification %D failure
937SB103[2.5]	720-4215-9	6020	Zinc	J	Serial dilution percent difference failure
937SB112	720-4217-1	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB112	720-4217-1	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB112 DUP	720-4217-2	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB112 DUP	720-4217-2	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB112 DUP	720-4217-2	8260B	Tetrachloroethene	J+	Surrogate percent recovery failure
937SB130	720-4217-3	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB130	720-4217-3	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB129	720-4217-4	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB129	720-4217-4	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB129 DUP	720-4217-5	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB129 DUP	720-4217-5	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
TB2	720-4217-6	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
TB2	720-4217-6	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB110	720-4217-7	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB110	720-4217-7	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
933SB103	720-4217-8	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
933SB103	720-4217-8	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB116	720-4217-9	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB116	720-4217-9	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SB117	720-4217-10	8260B	Methyl ethyl ketone	R	Average and Daily RRF failure
937SB117	720-4217-10	8260B	Methyl isobutyl ketone	R	Average and Daily RRF failure
937SK01	720-4380-1	6020	Arsenic	J	Serial dilution percent difference failure

RRF: Relative response factor
%D: Percent difference
%R: percent recovery
CCV: Continuing calibration verification (standard)

Table 3
Summary of Field Duplicates
Building 937
The Presidio of San Francisco, CA

Original Sample ID	Laboratory ID	Matrix	Compound	Original Results*	Duplicate Sample ID	Laboratory ID	Duplicate Results*	RPD
937WP01	720-4114-1	Water	All VOCs	ND	937WP01 DUP	720-4114-4	ND	NA
937WP04	720-4114-2	Water	All VOCs	ND	937WP04 DUP	720-4114-3	ND	NA
937SB112	720-4217-1	Water	Tetrachloroethene	6.3	937SB112 DUP	720-4217-2	5.9	6.6%
937SB112	720-4217-1	Water	All other VOCs	ND	937SB112 DUP	720-4217-2	ND	NA
937SB129	720-4217-4	Water	All VOCs	ND	937SB129 DUP	720-4217-5	ND	NA
937SB112[2]	720-4215-3	Soil	Tetrachloroethene	20	937SB112[2]DUP	720-4215-4	43	-73%
937SB112[2]	720-4215-3	Soil	All other VOCs	ND	937SB112[2]DUP	720-4215-4	ND	NA
937SB129[2]	720-4215-5	Soil	All VOCs	ND	937SB129[2]DUP	720-4215-6	ND	NA

*Water units are ug/L; soil units are ug/kg.

VOCs: Volatile Organic Compounds

ND: Not detected

NC: Not calculated. The absolute difference between the sample result and the duplicate sample result is less than the reporting limit (waters) or less than 2X the reporting limit (soils).

N/A: Not analyzed

NA: Not applicable. Calculation of the relative percent difference between the sample result and the duplicate sample result is not applicable.

DataVal, Inc.

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ERLER & KALINOWSKI, INC.

TO: John DeWitt, Erler & Kalinowski, Inc. September 19, 2006

FROM: Donna Breaux, DataVal, Inc. DB 9/20/06 EKI Project No. A000003.08

DATA VALIDATION SUMMARY REPORT FOR THE BUILDING 937 SAMPLING EVENT, THE PRESIDIO OF SAN FRANCISCO, CA

LABORATORY: K PRIME, Inc., Santa Rosa, CA

SAMPLING DATES: December 1, 2005 and January 31, 2006

Data validation of Level III and Level IV laboratory data packages was performed according to the project-specific guidelines. These guidelines were outlined in the Presidio-wide Quality Assurance Project Plan, Sampling and Analysis Plan, April, 2001; and the U. S. Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review, June, 2001.

The data were reviewed for holding times, blanks, GC/MS tunes, initial calibrations, continuing calibration verification (CCV) standards, internal standards, laboratory control samples (LCS), matrix spikes (MS), matrix spike duplicates (MSD), field duplicate samples and compound identification and quantitation.

The following paragraphs highlight the essential findings of the data validation effort:

I. <u>Volatile Organic Compounds by GC/MS (TO-15)</u>

Overall, the data are usable as reported with any added qualifiers. Qualifications were required for the reasons noted in Section I.

A. <u>Reporting Limits</u>

Project required reporting limits for VOCs in air matrix samples were not stated in the QAPP. Samples 937VS104 (53378), 937VS105 (53379), 937VS106 (53380), 937VS107 (53381) and 937VS107 DUP (53382) were analyzed at dilutions in order to bring target analytes within the calibration range of the instrument. The reporting limits were raised by the dilution factors, and some analytes were non-detect at the raised reporting limits.

B. <u>Holding Times</u>

Technical holding time criteria specified in the analysis method were met for all project samples.

C. <u>Blanks</u>

Target analytes were not observed in any laboratory method blanks associated with the project samples.

D. Laboratory Control Samples
All QC criteria were met for the laboratory control samples associated with the project samples.

E. Matrix Spike/Matrix Spike Duplicate
Matrix spikes and matrix spike duplicates were not analyzed with the project samples for this analysis.

F. GC/MS Tunes
All QC criteria were met for the GC/MS tunes associated with the project samples.

G. Initial Calibration
Initial calibration criteria were met for all calibration standards associated with the project samples.

H. Continuing Calibration
Continuing calibration criteria were met for all continuing calibration standards associated with the project samples.

I. Internal Standards
Internal standard areas and retention times met QC acceptance criteria for all project samples, with the following exceptions:

1. Several project samples had internal standard areas outside the -40% to +40% acceptance criteria. The compounds associated with the outlying internal standards were qualified as estimated (J/UJ). The following table lists the samples that had failing internal standards

Project Sample ID	Laboratory Sample ID	Internal Standard	Area Counts	Area Acceptance Range
937VS104	53378	Chlorobenzene-d5	299258	314218-733174
937VS105	53379	Chlorobenzene-d5	285605	314218-733174
937VS106	53380	Chlorobenzene-d5	299332	314218-733174
937VS107	53381	Chlorobenzene-d5	307834	314218-733174
937VS107 DUP	53382	1,4-Difluorobenzene	254872	263467-614757
937VS107 DUP	53382	Chlorobenzene-d5	259547	314218-733174
937VS109	53384	Chlorobenzene-d5	237165	314218-733174

See Table 2 of this report for a summary of samples qualified for internal standard area count failure.

J. Surrogates
Use of surrogate spikes in the samples was not appropriate for the method of analysis and sample matrix.

K. Compound Identification and Quantitation

Samples 937VS101 (53375) and 937IA 103 (53914) received full (Level IV) data validation. This included re-calculation of GC/MS tunes, initial and continuing calibrations and internal standard areas; in addition to re-calculation of all reported results for VOCs in these samples. The results for VOCs were re-calculated and verified as correctly reported by the laboratory for the above listed samples.

The following paragraphs highlight the essential findings of the field duplicate samples:

Field duplicate precision was evaluated by calculating the relative percent difference (RPD) between detected results in the original sample and its associated duplicate. The control limit used for field duplicates was a relative percent difference less than or equal to 50 percent, or the absolute difference of the two results must be less than the reporting limit for those analytes that were at or near the detection limit. Two samples were collected in duplicate for the Building 937 sampling event.

Project Sample Primary ID	Laboratory Sample ID	Project Sample Duplicate ID	Laboratory Sample ID
937VS107	53381	937VS107 DUP	53382
937IA 103	53914	937IA 103 DUP	53915

The attached Table 3 summarizes the field duplicate sample results. The detected results of the original sample and the associated duplicate sample were compared and the calculated relative percent differences (RPDs) reported. All RPDs met the 50 percent precision control limit requirement.

SUMMARY

The attached Table 1 lists the samples and analyses that were included in the data validation effort. This table also designates which samples/analyses received Level IV data validation. The attached Table 2 summarizes the data qualifications required for the project samples for each test method included in the data packages.

USABILITY

The quality control criteria were reviewed, and other than those discussed above, all criteria were met and the data are considered acceptable. Estimated sample results (J/UJ) are usable only for limited purposes. Based upon the full and cursory validation, all other results are considered valid and usable for all purposes.

VALIDATION QUALIFIERS IDENTIFICATION

The definitions of the following qualifiers are prepared according to the document, "USEPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review," June, 2001.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. *A minus sign (-) indicates the numerical value has a low bias. A plus sign (+) indicates the numerical value has a high bias.*

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Table 1
Sample Summary
Building 937
The Presidio of San Francisco, CA

Site Sample ID	Laboratory Sample ID	Date Sampled	Analysis	Sample Type
937VS101	**53375**	**1-Dec-05**	**VOCs with TICs (TO-15)**	**Air**
937VS102	53376	1-Dec-05	VOCs with TICs (TO-15)	Air
937VS103	53377	1-Dec-05	VOCs with TICs (TO-15)	Air
937VS104	53378	1-Dec-05	VOCs with TICs (TO-15)	Air
937VS105	53379	1-Dec-05	VOCs with TICs (TO-15)	Air
937VS106	53380	1-Dec-05	VOCs with TICs (TO-15)	Air
937VS107	53381	1-Dec-05	VOCs with TICs (TO-15)	Air (1)
937VS107 DUP	53382	1-Dec-05	VOCs with TICs (TO-15)	FD (1)
937VS108	53383	1-Dec-05	VOCs with TICs (TO-15)	Air
937VS109	53384	1-Dec-05	VOCs with TICs (TO-15)	Air
937IA 101	53912	31-Jan-06	VOCs with TICs (TO-15)	Air
937IA 102	53913	31-Jan-06	Selected VOCs (TO-15)	Air
937IA 103	**53914**	**31-Jan-06**	**Selected VOCs (TO-15)**	**Air (2)**
937IA 103 DUP	53915	31-Jan-06	Selected VOCs (TO-15)	FD (2)
937IA 104	53916	31-Jan-06	Selected VOCs (TO-15)	Air
937IA 105	53917	31-Jan-06	Selected VOCs (TO-15)	Air
937IA 106	53918	31-Jan-06	Selected VOCs (TO-15)	Air

VOCs: Volatile Organic Compounds
TICs: Tentatively Identified Compounds
Selected VOCs: Chloroform, 1,1,1-trichloroethane, benzene, trichloroethene, toluene, tetrachloroethene, xylene (m+p), xylene (o) and 1,2,4-trimethylbenzene
FD: Field duplicate of previous numbered sample, (1), (2), etc.
BOLD: Bold typeface indicates samples/analyses that received full (Level IV) data validation

Table 2
Qualified Data Summary
Building 937
The Presidio of San Francisco, CA

Sample ID	Laboratory ID	Analysis Method	Compound	Qualifier	Reason
937VS104	53378	TO-15	Chlorobenzene	UJ	Internal standard area count failure
937VS104	53378	TO-15	Ethylbenzene	UJ	Internal standard area count failure
937VS104	53378	TO-15	Xylene (m+p)	UJ	Internal standard area count failure
937VS104	53378	TO-15	Styrene	UJ	Internal standard area count failure
937VS104	53378	TO-15	Xylene (o)	UJ	Internal standard area count failure
937VS104	53378	TO-15	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
937VS104	53378	TO-15	1,3,5-Trimethylbenzene	UJ	Internal standard area count failure
937VS104	53378	TO-15	1,2,4-Trimethylbenzene	UJ	Internal standard area count failure
937VS104	53378	TO-15	1,3-Dichlorobenzene	UJ	Internal standard area count failure
937VS104	53378	TO-15	1,4-Dichlorobenzene	UJ	Internal standard area count failure
937VS104	53378	TO-15	1,2-Dichlorobenzene	UJ	Internal standard area count failure
937VS104	53378	TO-15	1,2,4-Trichlorobenzene	UJ	Internal standard area count failure
937VS104	53378	TO-15	Hexachlorobutadiene	UJ	Internal standard area count failure
937VS105	53379	TO-15	Chlorobenzene	UJ	Internal standard area count failure
937VS105	53379	TO-15	Ethylbenzene	UJ	Internal standard area count failure
937VS105	53379	TO-15	Xylene (m+p)	UJ	Internal standard area count failure
937VS105	53379	TO-15	Styrene	UJ	Internal standard area count failure
937VS105	53379	TO-15	Xylene (o)	UJ	Internal standard area count failure
937VS105	53379	TO-15	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
937VS105	53379	TO-15	1,3,5-Trimethylbenzene	UJ	Internal standard area count failure
937VS105	53379	TO-15	1,2,4-Trimethylbenzene	UJ	Internal standard area count failure
937VS105	53379	TO-15	1,3-Dichlorobenzene	UJ	Internal standard area count failure
937VS105	53379	TO-15	1,4-Dichlorobenzene	UJ	Internal standard area count failure
937VS105	53379	TO-15	1,2-Dichlorobenzene	UJ	Internal standard area count failure
937VS105	53379	TO-15	1,2,4-Trichlorobenzene	UJ	Internal standard area count failure
937VS105	53379	TO-15	Hexachlorobutadiene	UJ	Internal standard area count failure
937VS106	53380	TO-15	Chlorobenzene	UJ	Internal standard area count failure
937VS106	53380	TO-15	Ethylbenzene	UJ	Internal standard area count failure
937VS106	53380	TO-15	Xylene (m+p)	UJ	Internal standard area count failure
937VS106	53380	TO-15	Styrene	UJ	Internal standard area count failure
937VS106	53380	TO-15	Xylene (o)	UJ	Internal standard area count failure
937VS106	53380	TO-15	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
937VS106	53380	TO-15	1,3,5-Trimethylbenzene	UJ	Internal standard area count failure
937VS106	53380	TO-15	1,2,4-Trimethylbenzene	UJ	Internal standard area count failure
937VS106	53380	TO-15	1,3-Dichlorobenzene	UJ	Internal standard area count failure
937VS106	53380	TO-15	1,4-Dichlorobenzene	UJ	Internal standard area count failure
937VS106	53380	TO-15	1,2-Dichlorobenzene	UJ	Internal standard area count failure
937VS106	53380	TO-15	1,2,4-Trichlorobenzene	UJ	Internal standard area count failure
937VS106	53380	TO-15	Hexachlorobutadiene	UJ	Internal standard area count failure
937VS107	53381	TO-15	Chlorobenzene	UJ	Internal standard area count failure
937VS107	53381	TO-15	Ethylbenzene	UJ	Internal standard area count failure
937VS107	53381	TO-15	Xylene (m+p)	UJ	Internal standard area count failure
937VS107	53381	TO-15	Styrene	UJ	Internal standard area count failure

Table 2
Qualified Data Summary
Building 937
The Presidio of San Francisco, CA

Sample ID	Laboratory ID	Analysis Method	Compound	Qualifier	Reason
937VS107	53381	TO-15	Xylene (o)	UJ	Internal standard area count failure
937VS107	53381	TO-15	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
937VS107	53381	TO-15	1,3,5-Trimethylbenzene	UJ	Internal standard area count failure
937VS107	53381	TO-15	1,2,4-Trimethylbenzene	UJ	Internal standard area count failure
937VS107	53381	TO-15	1,3-Dichlorobenzene	UJ	Internal standard area count failure
937VS107	53381	TO-15	1,4-Dichlorobenzene	UJ	Internal standard area count failure
937VS107	53381	TO-15	1,2-Dichlorobenzene	UJ	Internal standard area count failure
937VS107	53381	TO-15	1,2,4-Trichlorobenzene	UJ	Internal standard area count failure
937VS107	53381	TO-15	Hexachlorobutadiene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,2-Dichloropropane	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	Trichloroethene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	trans-1,3-Dichloropropene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	cis-1,3-Dichloropropene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	Toluene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,1,2-Trichloroethane	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,2-Dibromoethane	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	Tetrachloroethene	J	Internal standard area count failure
937VS107 DUP	53382	TO-15	Chlorobenzene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	Ethylbenzene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	Xylene (m+p)	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	Styrene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	Xylene (o)	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,3,5-Trimethylbenzene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,2,4-Trimethylbenzene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,3-Dichlorobenzene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,4-Dichlorobenzene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,2-Dichlorobenzene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	1,2,4-Trichlorobenzene	UJ	Internal standard area count failure
937VS107 DUP	53382	TO-15	Hexachlorobutadiene	UJ	Internal standard area count failure
937VS109	53384	TO-15	Chlorobenzene	UJ	Internal standard area count failure
937VS109	53384	TO-15	Ethylbenzene	UJ	Internal standard area count failure
937VS109	53384	TO-15	Xylene (m+p)	J	Internal standard area count failure
937VS109	53384	TO-15	Styrene	UJ	Internal standard area count failure
937VS109	53384	TO-15	Xylene (o)	UJ	Internal standard area count failure
937VS109	53384	TO-15	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
937VS109	53384	TO-15	1,3,5-Trimethylbenzene	UJ	Internal standard area count failure
937VS109	53384	TO-15	1,2,4-Trimethylbenzene	UJ	Internal standard area count failure
937VS109	53384	TO-15	1,3-Dichlorobenzene	UJ	Internal standard area count failure
937VS109	53384	TO-15	1,4-Dichlorobenzene	UJ	Internal standard area count failure
937VS109	53384	TO-15	1,2-Dichlorobenzene	UJ	Internal standard area count failure
937VS109	53384	TO-15	1,2,4-Trichlorobenzene	UJ	Internal standard area count failure
937VS109	53384	TO-15	Hexachlorobutadiene	UJ	Internal standard area count failure

Table 3
Summary of Field Duplicates
Building 937
The Presidio of San Francisco, CA

Original Sample ID	Laboratory ID	Matrix	Compound	Original Results*	Duplicate Sample ID	Laboratory ID	Duplicate Results*	RPD
937VS107	53381	Air	Tetrachloroethene	854	937VS107 DUP	53382	880	-3.0%
937VS107	53381	Air	All other VOCs	ND	937VS107 DUP	53382	ND	NA
937IA 103	53914	Air	Benzene	0.442	937IA 103 DUP	53915	0.43	2.8%
937IA 103	53914	Air	Tetrachloroethene	0.101	937IA 103 DUP	53915	0.156	-43%
937IA 103	53914	Air	All other VOCs	ND	937IA 103 DUP	53915	ND	NA

*Units are ppbv.

VOCs: Volatile Organic Compounds

ND: Not detected

NC: Not calculated. The absolute difference between the sample result and the duplicate sample result is less than the reporting limit (waters) or less than 2X the reporting limit (soils).

N/A: Not analyzed

NA: Not applicable. Calculation of the relative percent difference between the sample result and the duplicate sample result is not applicable.

DataVal, Inc.

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TO: John DeWitt, Erler & Kalinowski, Inc. September 27, 2006

FROM: Donna Breaux, DataVal, Inc. DB 10/1/06 EKI Project No. A000003.08

DATA VALIDATION SUMMARY REPORT FOR THE BUILDING 937 SAMPLING EVENT, THE PRESIDIO OF SAN FRANCISCO, CA

LABORATORY: K PRIME, Inc., Santa Rosa, CA

SAMPLING DATES: June 14, 21 and July 20, 2006

Data validation of Level III and Level IV laboratory data packages was performed according to the project-specific guidelines. These guidelines were outlined in the Presidio-wide Quality Assurance Project Plan, Sampling and Analysis Plan, April, 2001; and the U. S. Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review, June, 2001.

The data were reviewed for holding times, blanks, laboratory control samples, matrix spikes and matrix spike duplicates, GC/MS tunes, initial calibrations, continuing calibration verification standards, internal standards, field QC samples and compound identification and quantitation.

The following paragraphs highlight the essential findings of the data validation effort:

I. <u>Volatile Organic Compounds by GC/MS (TO-15)</u>

Overall, the data are usable as reported with any added qualifiers. Qualifications were required for the reasons noted in Sections H and I.

A. <u>Reporting Limits</u>

Project required reporting limits for VOCs in air matrix samples were not stated in the QAPP. Samples 937SB112 DUP (56031), 937VS101 (56716), 937VS102 (56717), 937VS103 (56718), 937VS104 (56719), 937VS105 (56720), 937VS106 (56721), 937VS107 (56722), 937VS107DUP (56723) and 937VS108 (56724) were analyzed at dilutions due to the presence of target and/or non-target analytes. The target compound tetrachloroethene required dilution for samples 937SB112 DUP (56031), 937VS104 (56719), 937VS107 (56722) and 937VS107DUP (56723) in order to bring it within the calibration range of the instrument. All other samples listed above were diluted to reduce the level of the leak check compound 1,1,1,2-tetrafluoroethane to an acceptable level. The reporting limits were raised by the dilution factors, and some sample results were non-detect at the raised reporting limits.

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B. Holding Times
Technical holding time criteria specified in the analysis method were met for all project samples.

C. Blanks
Target analytes were not observed in any laboratory method blanks associated with the project samples.

D. Laboratory Control Samples
All QC criteria were met for the laboratory control samples associated with the project samples.

E. Matrix Spike/Matrix Spike Duplicate
Matrix spikes and matrix spike duplicates were not analyzed with the project samples for this analysis.

F. GC/MS Tunes
All QC criteria were met for the GC/MS tunes associated with the project samples.

G. Initial Calibration
Initial calibration criteria were met for all calibration standards associated with the project samples.

H. Continuing Calibration
Continuing calibration criteria were met for all continuing calibration standards associated with the project samples, with the following exceptions:

1. The 7/14/06 at 14:38 air matrix continuing calibration verification (CCV) standard analyzed on instrument GC08 had two compounds with percent differences (%Ds) less than the +/-30%D acceptance criteria: 1,2,4-trichlorobenzene (-64%) and hexachlorobutadiene (-72%). The results for 1,2,4-trichlorobenzene and hexachlorobutadiene in the associated samples were non-detect and qualified as estimated (UJ).
2. The 7/17/06 at 14:19 air matrix CCV analyzed on instrument GC08 had two compounds with %Ds less than the +/-30%D acceptance criteria: 1,2,4-trichlorobenzene (-65%) and hexachlorobutadiene (-73%). The results for 1,2,4-trichlorobenzene and hexachlorobutadiene in the associated samples were non-detect and qualified as estimated (UJ).
3. The 8/4/06 at 12:48 air matrix CCV analyzed on instrument GC08 had three compounds with %Ds less than the +/-30%D acceptance criteria: benzene (-32%), 1,2,4-trichlorobenzene (-62%) and hexachlorobutadiene (-76%). The results for benzene, 1,2,4-trichlorobenzene and hexachlorobutadiene in the associated samples were qualified as estimated with a low bias (J-/UJ).
4. The 8/7/06 at 16:16 air matrix CCV analyzed on instrument GC08 had one compound with a daily relative response factor (RRF) less than the

0.05 acceptance criteria: 1,2,4-trichlorobenzene at 0.037. The results for 1,2,4-trichlorobenzene in the associated samples were non-detect and qualified as rejected (R).

5. The same CCV (8/7/06 at 16:16) had three compounds with %Ds less than the +/-30%D acceptance criteria: cis-1,3-dichloropropene (-34%), 1,2,4-trichlorobenzene (-76%) and hexachlorobutadiene (-78%). The results for cis-1,3-dichloropropene and hexachlorobutadiene in the associated samples were non-detect and qualified as estimated (UJ). The results for 1,2,4-trichlorobenzene in the associated samples were previously rejected due to minimum RRF failure, and further qualification was not required.

See Table 2 of this report for a summary of qualifications due to continuing calibration percent difference and minimum relative response factor failures.

I. Internal Standards

Internal standard areas and retention times met QC acceptance criteria for all project samples, with the following exception:

1. One project sample had an internal standard area outside the -40% to +40% acceptance criteria. The compounds associated with the outlying internal standard were qualified as estimated (J/UJ). The following table lists the sample that had failing internal standards

Project Sample ID	Laboratory Sample ID	Internal Standard	Area Counts	Area Acceptance Range
937SB114 DUP	56030	Chlorobenzene-d5	240910	241445-563371

See Table 2 of this report for a summary of sample results qualified for internal standard area count failure.

J. Compound Identification and Quantitation

Samples 937SB114 DUP (56030) and 937VS103 (56718) received full (Level IV) data validation. This included re-calculation of GC/MS tunes, initial and continuing calibrations and internal standard areas; in addition to re-calculation of all reported results for VOCs in these samples. The results for VOCs were re-calculated and verified as correctly reported by the laboratory for the above listed samples.

SUMMARY

The attached Table 1 lists the samples and analyses that were included in the data validation effort. This table also designates which samples/analyses received Level IV data validation. The attached Table 2 summarizes the data qualifications required for the project samples for each test method included in the data packages.

USABILITY

The quality control criteria were reviewed, and other than those discussed above, all criteria were met and the data are considered acceptable. Rejected sample results (R) are not usable for any purpose. Estimated sample results (J/UJ) are usable only for limited purposes. Based upon the full and cursory validation, all other results are considered valid and usable for all purposes.

VALIDATION QUALIFIERS IDENTIFICATION

The definitions of the following qualifiers are prepared according to the document, "USEPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review," June, 2001.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. *A minus sign (-) indicates the numerical value has a low bias. A plus sign (+) indicates the numerical value has a high bias.*

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following paragraphs highlight the essential findings of the field duplicate samples:

Field duplicate precision was evaluated by calculating the relative percent difference (RPD) between detected results in the original sample and its associated duplicate. The control limit used for field duplicates was a relative percent difference less than or equal to 50 percent, or the absolute difference of the two results must be less than twice the reporting limit for those analytes that were at or near the detection limit. Two samples were collected in duplicate for the Building 937 sampling event.

Project Sample Primary ID	Laboratory Sample ID	Project Sample Duplicate ID	Laboratory Sample ID
933VS101	56125	933VS101DUP	56126
937VS107	56722	937VS107DUP	56723

The attached Table 3 summarizes the field duplicate sample results. The detected results of the original sample and the associated duplicate sample were compared and the calculated RPDs reported. All RPDs met the 50 percent precision control limit requirement, with the following exception:

1. In field duplicates 933VS101 and 933VS101DUP, the absolute difference between the results was greater than twice the 1 ppbv reporting limit for tetrachloroethene. The original result was 5.99 ppbv and the duplicate result was non-detect at 1 ppbv.

The analysis of field duplicate samples is a measure of both field and analytical precision. The imprecision in the results in the field duplicate pairs listed above may be due to the sample matrix, sampling or laboratory technique, sample non-homogeneity or method defects. With the exception noted above, the results between the field duplicate pairs matched well. Since the effect on the quality of the data is not known, data is not qualified for field duplicate failure.

Table 1
Sample Summary
Building 937
The Presidio of San Francisco, CA

Site Sample ID	Laboratory Sample ID	Date Sampled	Analyses	Sample Type
937SB114 DUP	**56030**	**14-Jun-06**	**Volatile Organic Compounds (TO-15)**	**Air**
937SB112 DUP	56031	14-Jun-06	Volatile Organic Compounds (TO-15)	Air
933VS101	56125	21-Jun-06	Volatile Organic Compounds (TO-15)	Air (1)
933VS101DUP	56126	21-Jun-06	Volatile Organic Compounds (TO-15)	FD (1)
933VS102	56127	21-Jun-06	Volatile Organic Compounds (TO-15)	Air
937VS101	56716	20-Jul-06	Volatile Organic Compounds (TO-15)	Air
937VS102	56717	20-Jul-06	Volatile Organic Compounds (TO-15)	Air
937VS103	**56718**	**20-Jul-06**	**Volatile Organic Compounds (TO-15)**	**Air**
937VS104	56719	20-Jul-06	Volatile Organic Compounds (TO-15)	Air
937VS105	56720	20-Jul-06	Volatile Organic Compounds (TO-15)	Air
937VS106	56721	20-Jul-06	Volatile Organic Compounds (TO-15)	Air
937VS107	56722	20-Jul-06	Volatile Organic Compounds (TO-15)	Air (2)
937VS107DUP	56723	20-Jul-06	Volatile Organic Compounds (TO-15)	FD (2)
937VS108	56724	20-Jul-06	Volatile Organic Compounds (TO-15)	Air
937VS109	56725	20-Jul-06	Volatile Organic Compounds (TO-15)	Air

FD: Field duplicate of previous numbered sample, (1), (2), etc.

BOLD: Bold typeface indicates samples/analyses that received full (Level IV) data validation

* The original sample was collected by TEG and analyzed in their mobile laboratory. TEG results were not provided for the validation effort.

Table 2
Qualified Data Summary
Building 937
The Presidio of San Francisco, CA

Sample ID	Laboratory ID	Analysis Method	Compound	Qualifier	Reason
937SB114 DUP	56030	TO-15	Chlorobenzene	UJ	Internal standard area count failure
937SB114 DUP	56030	TO-15	Ethylbenzene	J	Internal standard area count failure
937SB114 DUP	56030	TO-15	Xylene (m+p)	J	Internal standard area count failure
937SB114 DUP	56030	TO-15	Styrene	UJ	Internal standard area count failure
937SB114 DUP	56030	TO-15	Xylene (o)	J	Internal standard area count failure
937SB114 DUP	56030	TO-15	1,1,2,2-Tetrachloroethane	UJ	Internal standard area count failure
937SB114 DUP	56030	TO-15	1,3,5-Trimethylbenzene	J	Internal standard area count failure
937SB114 DUP	56030	TO-15	1,2,4-Trimethylbenzene	J	Internal standard area count failure
937SB114 DUP	56030	TO-15	1,3-Dichlorobenzene	UJ	Internal standard area count failure
937SB114 DUP	56030	TO-15	1,4-Dichlorobenzene	UJ	Internal standard area count failure
937SB114 DUP	56030	TO-15	1,2-Dichlorobenzene	UJ	Internal standard area count failure
937SB114 DUP	56030	TO-15	1,2,4-Trichlorobenzene	UJ	CCV %D failure, Internal standard area count failure
937SB114 DUP	56030	TO-15	Hexachlorobutadiene	UJ	CCV %D failure, Internal standard area count failure
937SB112 DUP	56031	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
937SB112 DUP	56031	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
933VS101	56125	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
933VS101	56125	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
933VS101DUP	56126	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
933VS101DUP	56126	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
933VS102	56127	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
933VS102	56127	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS101	56716	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
937VS101	56716	TO-15	Benzene	UJ	Continuing calibration verification %D failure
937VS101	56716	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS102	56717	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
937VS102	56717	TO-15	Benzene	J-	Continuing calibration verification %D failure
937VS102	56717	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS103	56718	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
937VS103	56718	TO-15	Benzene	J-	Continuing calibration verification %D failure
937VS103	56718	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS104	56719	TO-15	1,2,4-Trichlorobenzene	R	Daily RRF failure, CCV %D failure
937VS104	56719	TO-15	cis-1,3-Dichloropropene	UJ	Continuing calibration verification %D failure
937VS104	56719	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS105	56720	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
937VS105	56720	TO-15	Benzene	J-	Continuing calibration verification %D failure
937VS105	56720	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS106	56721	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
937VS106	56721	TO-15	Benzene	UJ	Continuing calibration verification %D failure
937VS106	56721	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS107	56722	TO-15	1,2,4-Trichlorobenzene	R	Daily RRF failure, CCV %D failure
937VS107	56722	TO-15	cis-1,3-Dichloropropene	UJ	Continuing calibration verification %D failure
937VS107	56722	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS107DUP	56723	TO-15	1,2,4-Trichlorobenzene	R	Daily RRF failure, CCV %D failure
937VS107DUP	56723	TO-15	cis-1,3-Dichloropropene	UJ	Continuing calibration verification %D failure
937VS107DUP	56723	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS108	56724	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
937VS108	56724	TO-15	Benzene	J-	Continuing calibration verification %D failure
937VS108	56724	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure
937VS109	56725	TO-15	1,2,4-Trichlorobenzene	UJ	Continuing calibration verification %D failure
937VS109	56725	TO-15	Benzene	J-	Continuing calibration verification %D failure
937VS109	56725	TO-15	Hexachlorobutadiene	UJ	Continuing calibration verification %D failure

RRF: Relative response factor
%D: Percent difference
CCV: Continuing calibration verification (standard)

Table 3
Summary of Field Duplicates
Building 937
The Presidio of San Francisco, CA

Original Sample ID	Laboratory ID	Matrix	Compound	Original Results*	Duplicate Sample ID	Laboratory ID	Duplicate Results*	RPD
933VS101	56125	Air	Chloromethane	1.27	933VS101DUP	56126	ND< 1	NC
933VS101	56125	Air	1,1-Dichloroethane	1.1	933VS101DUP	56126	ND< 1	NC
933VS101	56125	Air	Tetrachloroethene	5.99	933VS101DUP	56126	ND< 1	> +/- 2RL
933VS101	56125	Air	All other VOCs	ND	933VS101DUP	56126	ND	NA
937VS107	56722	Air	Trichloroethene	6.18	937VS107DUP	56723	8.05	-26%
937VS107	56722	Air	Tetrachloroethene	848	937VS107DUP	56723	1100	-26%
937VS107	56722	Air	m+p-Xylene	ND< 10	937VS107DUP	56723	23.4	NC
937VS107	56722	Air	o-Xylene	ND< 10	937VS107DUP	56723	11	NC
937VS107	56722	Air	1,3,5-Trimethylbenzene	ND< 10	937VS107DUP	56723	13.5	NC
937VS107	56722	Air	1,2,4-Trimethylbenzene	19.6	937VS107DUP	56723	35.6	NC
937VS107	56722	Air	All other VOCs	ND	937VS107DUP	56723	ND	NA

*Units are ppbv.
VOCs: Volatile Organic Compounds
ND: Not detected
NC: Not calculated. The absolute difference between the sample result and the duplicate sample result is less than 2X the reporting limit.
N/A: Not analyzed
NA: Not applicable. Calculation of the relative percent difference between the sample result and the duplicate sample result is not applicable.